

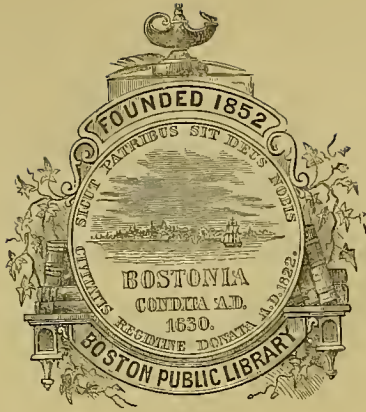
No 8012. 068



Boston Public Library

Do not write in this book or mark it with pen or pencil. Penalties for so doing are imposed by the Revised Laws of the Commonwealth of Massachusetts.

This book was issued to the borrower on the date last stamped below.



K. 2013

8

PAMPHLETS.
Catalogues.

8012. 48

5928

ACCESSION No. 249,126

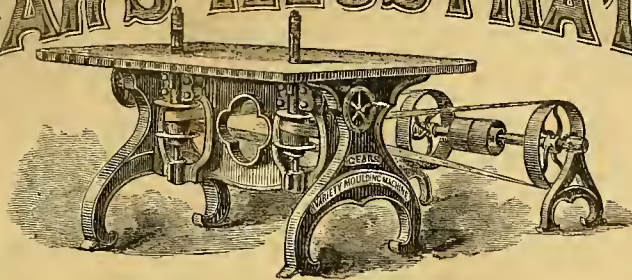
ADDED Mar. 17 1874.

CATALOGUED BY

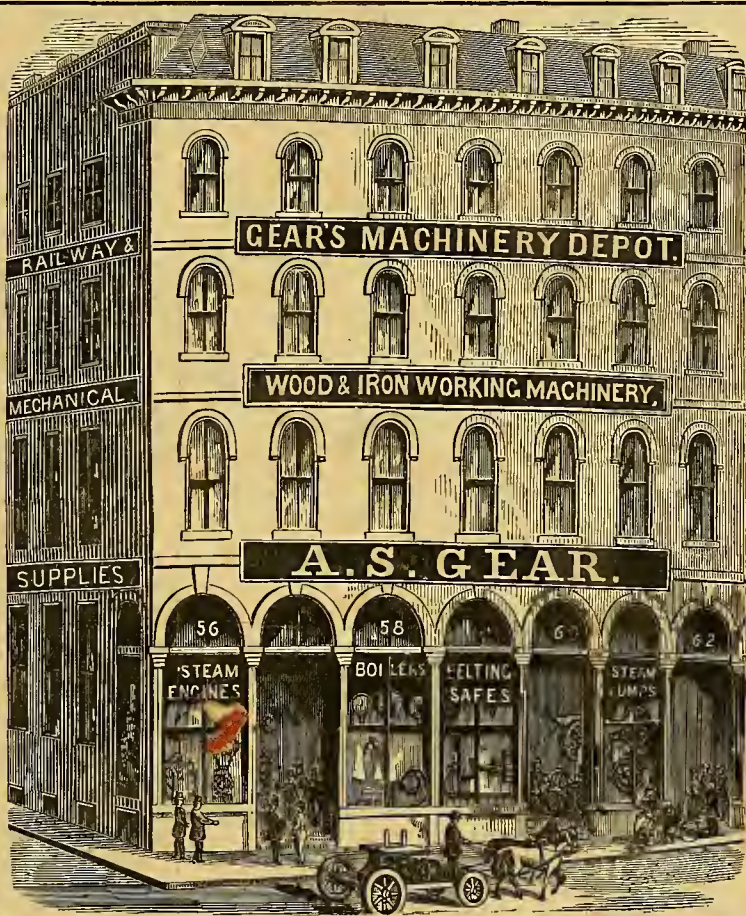
REVISED BY

MEMORANDA.

GEAR'S ILLUSTRATED



CATALOGUE



SUDBURY
ST.

56
TO
62
SUDBURY
ST.

OF WOOD & IRON WORKING

MACHINERY.

BOSTON.

Wood and Iron Working Machinery,

Steam Engines, Boilers, and Mechanical Supplies.

56 to 62
Sudbury Street, }

A. S. GEAR,

{ 56 to 62
Sudbury Street,

BOSTON, MASS., U. S. A.

MANUFACTURER, Contractor, and Dealer in all kinds of Machinery and General Supplies for Wood and Iron Working Establishments, will furnish any article or device, or give assistance in selecting the best Machinery and Supplies known, REGARDLESS OF MAKER. The trouble usually experienced in selecting, and the hard task of deciding intelligently and satisfactorily as to the merits of different machines, or the truthfulness of the representations advanced by different manufacturers and dealers who are particularly interested in the machines they build or are special agents for, can be wholly obviated by dealing with us, and much TIME, MONEY AND PERPLEXITY SAVED. We are interested in ALL manufacturers, but in no particular one to the disadvantage of another. The most valuable and useful machines are found scattered among all manufacturers. No one concern makes ALL the best. We ship machines from the factories where they are made, so that freights cost patrons no more than if purchased of the manufacturers. WE ASK BUT ONE PROFIT. Read the following list of articles; there are many others not enumerated. Price Lists furnished on application:

Wood Working Machines and Supplies.

Blind Slat Tenoning Machines.
Band Sawing Machines.
Blind Slat Crimping Machines.
Belting.
Brad Drivers.
Bedstead Machinery.
Boring Machines.
Buzz Planers.
Blind Wiring Machines.
Blind Stile Mortising Machines.
Clapboard Planing Machines.
Circular Saws.
Cigar Box and Panel Planers.
Churn Machinery.
Chair Machinery.
Dadoing Machines.
Dovetailing Machines, makes Mortise and Tenon at once, automatic.
Dowel Machines.
Daniels Planers.
Dimension Planers.
Emery Grinders.
Emery Wheels.
French Band Saw Blades.
Foot Mortising Machines.
Felloe Rounding Machines.
Felloe Planers.
Felloe Bending Machines.

Foot Jig Saws.
Grinding Machines.
Gauge and Variety Lathes.
Grooving Heads.
Horizontal Boring Machines.
Hub Boring and Cupping Machines.
Hand Working Machines.
Jig Saws.
Keg Machinery.
Lath Machinery.
Long Plane Jointers.
Machine Cut Lacing.
Mortising Chisels and Augers.
Mortis'g Machines, power and foot.
Moulding Machines.
Matcher Setter.
Miter Dovetail Machines.
Moulding Cutters for all machines.
Oval Turning Lathes.
Planing, Tonguing and Grooving Machines.
Paneling and Carving Machines.
Panel Raisers.
Planing Machine Knives.
Pulleys, Hangers and Shafting.
Rod, Pin and Dowel Machines.
Re-sawing Machines.
Surfacing Machines.

Spoke Machinery.
Saw Arbors.
Saw Sharpening Machines.
Shingle Machines.
Scroll Saws.
Side Jointing Machines.
Saw Tables.
Saw Mills.
Stave Jointers.
Stave Cutter and Head Planers.
Slat Planing Machines.
Spoke Tenoning Machines.
Spoke Throating Machines.
Spoke Polishing Machines.
Sand Papering Machines.
Stave and Chair Back Saws.
Self-Acting Sawing Machines.
Spool Machinery.
Saw Benches, with late improvements.
Tenoning Machines.
Timber Mortisers.
Tub and Pail Machinery.
Turning Lathes.
Upright Boring Machines.
Variety Moulding Machines.
Wood Turning Lathes of every description.

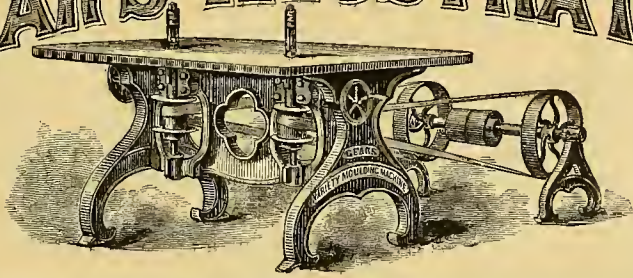
Iron Working Machines and Supplies.

Axle Lathes.
Angle Boring Machines.
Blacksmith's Bolt Cutter and Drill.
Boilers—Horizontal, Vertical, Tubular and Flue.
Bolt Cutters and Bolt Headers.
Belting—Oak Tanned, warranted.
Boring Mills.
Centering Machines.
Chucks, Scroll, 4-Jawed and Drill.
Crank Planers.
Centrifugal Pumps.
Cold Rolled Shafting.
Caloric Engines.
Differential Pulley Blocks, with and without Gears.
Drop Presses.
Exhaust Fans.
Emery Grinders.
Emery Wheels.
Foot Lathes.
Fox Lathes.
Gun Machinery.
Gear Cutters.

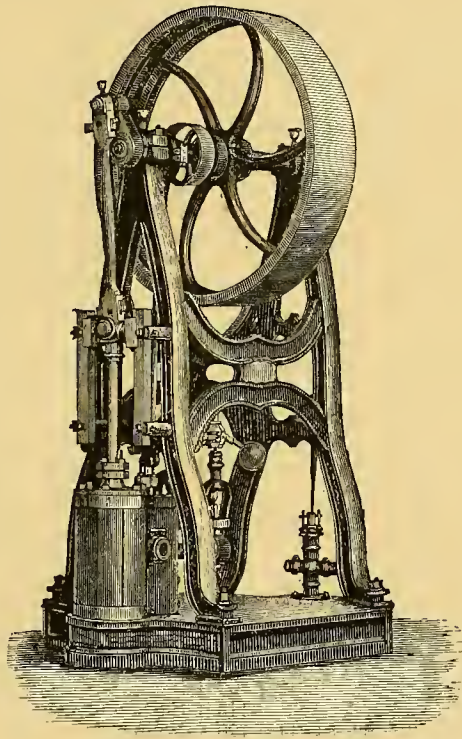
Hot Air Fans.
Hydraulic Presses.
Hydraulic Jacks.
Hoisting Machines.
Key Seating and Slotting Machines.
Lacing.
Lathes, all kinds and sizes.
Machines for Boring Cylinders.
Milling Machines.
Nut Tappers.
Nut Machines.
Oil Cans.
Oil Stones.
Paint Mills.
Patent Bolt Head Turners.
Plunger Pumps.
Planers, all kinds.
Pulleys, Hangers and Shafting.
Pressure Bellows.
Power Hammers.
Post Drills.
Portable Engines—something new.
Portable Forges.
Radial Drills.

Radius Link Planers.
Ratchet Drills.
Rotary Forcé Pumps.
Speed Indicators.
Steam Engines—Portable, Horizontal, Caloric and Hoisting.
Steam Pumps.
Steam Governors.
Steam Jacket and Glue Kettles.
Steam Gauges.
Suspension Drills.
Shaping Machines.
Slide and Compound Rests.
Shearing and Punching Machines.
Slotting Machines.
Steel Roll Machines.
Straightening Machines.
Traverse Drills.
Turret Lathes.
Twist Drills.
Trip Hammers.
Upright Drills, all kinds.
Vices, best in use.
V. rist Pin Lathes.

GEAR'S ILLUSTRATED



CATALOGUE



5928

56
70
62
SUDBURY
ST.

56
70
62
SUDBURY
ST.

OF WOOD AND IRON WORKING

MACHINERY.

BOSTON, MASS., U. S. A.

PRINTED AT A. S. GEAR'S PRINTING OFFICE, 62 SUDBURY STREET.

6-6-50

Index.

	PAGE		PAGE
Adjustable Circular Saw Benches	55, 56	Milling Machines	108, 109
Adjustable Double Spindle Boring Machine	48	Mitering Machines	48, 64
Alarm Gauges	124	Mortising and Boring Machine	40, 44
Automatic Dovetailing Machine	38, 39	Mortising Machines	40, 41, 42, 43, 44, 45
Automatic Knife Grinders	81, 82	Moulding Machines 21, 22, 23, 24, 25, 28, 29, 34, 35, 53, 54	
Balanced Jig Saw	65	Non-Shaking Balanced Jig Saw	65
Band Saws	67, 68, 69	Nut Tapping Machine	110
Bench Lathe	84	Pail Lathe	77
Blind Stile Boring Machine	43	Paneling and Moulding Machine	34, 35
Blind Stile Boring and Mortising Machines	46, 47	Panel Planer	19
Blind Slat Crimper	47	Parallel Motion Indicator	125
Blind Wiring Machine	46	Pattern Maker's Lathes	77, 96
Bolt Cutters	106, 107	Planer Knife Grinder	12, 81, 82
Boring Mill	94	Planers	10, 11, 12, 18, 19, 78
Boring Machines for Wood	48, 49, 50, 51, 52	Planers and Matchers	13, 14, 15, 16, 17
Boring Shaft	45	Planer for Electrotypers	78
Box Board Double Cut-off Saw	60	Planing Machine Knives	20
Box Board Edging Saw	60	Portable as Stationary	7
Box Board Matcher	59	Portable Engine	6
Box Machinery	59, 60	Portable Radial Drill	103
Brad Driver	57	Power Presses	112, 113
Brass Finisher's Lathe	89	Pressure Blower	119
Car Axle Lathe	93	Pulleys	85
Car Boring Machine	49	Ratchet Drill	114
Car Mortiser, with Boring Attachment	40, 41	Radial Drill	104, 105
Center Grinder	118	Railway Saw	59
Centering Machines	111	Recommendations	129, 130
Chucks, Drills and Reamer	85, 124	Re-Sawing Machine	63
Combined Drill and Slotters	101, 102	Ring Saw	61
Combination Wood Planer	10	Rod, Pin and Dowel Machines (hand and power)	80
Cutters for Gear's Paneling Machine	126	Rotary Bed Planers	18, 19
Cylinder Saws	63	Rules for Calculating Speed	4
Daniels Planer	11	Sash Clamp	75
Differential Pulley Blocks	117	Sash Dovetailing Machine	39
Door Clamp	74	Saw Arbors	58
Door Mortisers	42, 43	Saw Benches	55, 56, 57
Dovetailing Attachment for Paneling Machine	35	Saw Filing Machine	107
Dovetailing Machines	37, 38, 39	Saw Table, wood frame	57
Drills (iron)	98, 99, 100, 101, 102, 103, 104, 114	Scroll and Jig Saws	62, 65, 66
Dynamometers	122, 123	Self-Oiling Step for Vertical Spindle	33
Emery Grinders	82, 83, 84	Shafting	85
Engines	5, 6, 7, 8, 9	Shaping Machine (for iron and steel work)	87
Engine Lathes	90, 91, 92	Shearing and Punching Machines	118
Exhaust Fan	119	Shear Punch and Upsetter	114
Feed Table Attachment for Variety Moulding Machine	32	Shingle Machine	64
Foot Mortisers	41, 45	Spiral Spring Scroll Saw	66
Gate Saw	62	Splining or Slotting Machine	114
Gauge Lathe	79	Spoke Lathe	76
Geared Scroll Chuck	124	Stationery Engines	8, 9
Gear's Automatic Dovetailing Machine	38, 39	Steam Gauges	125
Gear's Non-Shaking Jig Saw	65	Steam Pumps	116, 121
Gear's Stone Machine	127	Steam Pressure Regulator	125
Gear's Variety Moulding Machine	28, 29	Step for Vertical Spindles	33
Governor and Valve	115	Surfacing Planers	12, 13, 14, 15, 16, 17, 18, 19
Grinding Machines	12, 81, 82, 83, 84, 118, 120	Swing Cut-off Saw	61
Grindstone Frame	105	Tenoning Machines	70, 71, 72, 73
Grooving Head	56	To the Public	3
Guards for Variety Moulding Machine	30	Traverse Drill	95
Hand Lathes	97	Universal Boring Machine	50
Hangers	85	Universal Emery Grinder	120
Head and Bottom Lathe	79	Universal Wood Worker	26, 27
Herring's Patent Champion Safes	128	Upright Boring Machines for wood	51, 52
Horizontal Engines	8, 9	Upright Drills	98, 99, 100
Index	2	Upright Shaping Machines	28, 29
Iron Frame Saw Benches	55, 56	Variety Moulding Machines	28, 29
Iron Planers	86, 87, 88	Vertical Engine	4
Jig and Scroll Saws	62, 65, 66	Vertical Engine (Rawson & Hittinger's)	1
Key Seat Machine	114	Water Gauges	124
Knives for Planing Machines	20	Weights of Iron	4
Large Car Tenoning Machine	70	Wood Lathe	78
Large Foot Mortising Machine	45	Wood Worker	26, 27
Matcher Setter	20	Work done on Gear's Paneling Machine	36
Matching Bits	25	Work done on Variety Moulding Machine	31, 32
Milling Lathe	111	Wrist Pin Lathe	109

To the Public.

In presenting this Catalogue to our patrons and the public generally, expressions of cordial thanks are justly due and freely given for the very liberal patronage heretofore bestowed upon this establishment. It is a source of much pleasure and gratification to be assured that the various wants of our numerous patrons and friends have been thus far so satisfactorily supplied, not only with the machinery and articles of our own manufacture, but with the almost numberless products and mechanical appliances of other manufacturers.

It will be our aim in the future, as it has been in the past, to have every machine of our own manufacture made of the very best materials and in the most thorough and workmanlike manner; and as it has been heretofore a special study, so it will be hereafter, to select nothing but the best and latest improved machinery,—and such as can be honestly recommended,—from other manufacturers. From the thorough knowledge gained by long experience in the use of the best machines now built, and possessing unequalled facilities for ascertaining the merits of all *new* machines, we feel warranted in assuring patrons that they cannot fail to be satisfied, both with the price and the quality of the machines they may purchase. Not being personally interested in any particular machine manufactured by other parties, or in league with any particular manufacturer, we can consequently make such selections as are best adapted to the particular work for which they may be required, and at the very lowest manufacturers' prices.

Believing *the best* machine to be always *the cheapest*, and that whatever is for the interest of our patrons is greatly for our own interest, we shall recommend nothing but the most approved machinery made, preferring not to trade rather than sell an inferior article. We confidently believe that we can do better for purchasers than if they dealt directly with the manufacturer, who, of course, is always particularly interested in machines of his own make, while our interest is in the machines which are known to be the best manufactured and which will consequently give the best satisfaction to the purchaser. It will be our endeavor to give every patron a fair equivalent for every dollar's worth of machinery he may purchase, and will warrant every machine to be in all particulars as represented.

In this Catalogue will be found the most approved and standard machines for wood and iron working purposes; but, as is known to all, new and important inventions, and improvements on old machines, are being brought out almost daily, and it will be our endeavor to keep our correspondents well posted in regard to all such inventions and improvements. Some manufacturers prefer to show their machines solely by photographs, and consequently, such machines are not here represented; but, on application, we will furnish any desired information in regard to them.

We trust that in the future, by square dealing and by promptly attending to all orders, we may merit a continuance of the favors so liberally bestowed in the past.

Until recently the business has been conducted under the firm name of A. S. & J. GEAR & Co., but hereafter it will be as herewith subscribed.

Yours truly,

A. S. GEAR.

Reasons in support of our claim to favorable consideration.

1. What we manufacture we exclusively control for the whole country by patents granted to us or purchased by us.
2. Instead of attempting to evade others' rights by manufacturing to get around good machines, we select and purchase them from legal owners.
3. We sell at the market price, and as low as producers, being satisfied with very small profits on large sales.
4. We ship machinery from the factories where it is made, so that the freights are the same as if purchased of the manufacturers.
5. We guarantee to furnish THE LATEST IMPROVED machinery known and that which is best suited to the work to be performed.
6. We sell original and legal productions only, thus preventing trouble with the owners of patents for infringements and costly litigations; and we, also, warrant every machine to be as represented.
7. We give special attention to fitting out shops complete, and by a consolidation of profits and saving of expense incident to selecting, are enabled to furnish all that the various manufacturers produce at as low, if not lower, rates than they can be purchased of others.
8. An experience extending over a period of twenty years, in the examination of all new contrivances as soon as known, and learning from users what they consider the best products, warrants us in saying that we can save purchasers a deal of trouble and money by giving us their patronage.
9. Our interest being also *the purchaser's interest*, we cannot afford to displease or misrepresent, therefore we make all our transactions of mutual benefit to THE GOOD BUILDER, THE PURCHASER and OURSELF.
10. We fill orders as designated by purchasers, or, when it is desired, select and send the best known—support the good and denounce the bad,—and by keeping thoroughly posted, often furnish a good tool or machine but little known at a cost much less than the stiff price demanded for others which are no better.
11. Our unprecedented success warrants us in keeping ordered ahead a large supply of good machinery, besides keeping at our warerooms a larger stock of machines and mechanical devices than is seldom found elsewhere in the country.
12. Send for Catalogue, and Circulars regarding any mechanical product. Look at the list of patrons of our establishment on the third page of cover. We have hundreds of others, many of which have been received recently, which, from want of space, we are prevented from inserting.

Rules for Calculating the Speed of Drums or Pulleys.

PROBLEM I.

THE DIAMETER OF THE DRIVEN BEING GIVEN, TO FIND ITS NUMBER OF REVOLUTIONS :

RULE.—Multiply the diameter of the driver by its number of revolutions, and divide the product by the diameter of the driven; the quotient will be the number of revolutions of the driven.

PROBLEM II.

THE DIAMETER AND REVOLUTIONS OF THE DRIVER BEING GIVEN, TO FIND THE DIAMETER OF THE DRIVEN, THAT SHALL MAKE ANY GIVEN NUMBER OF REVOLUTIONS IN THE SAME TIME :

RULE.—Multiply the diameter of the driver by its number of revolutions, and divide the product by the number of revolutions of the driven; the quotient will be its diameter.

PROBLEM III.

TO ASCERTAIN THE SIZE OF THE DRIVER :

RULE.—Multiply the diameter of the driven by the number of revolutions you wish it to make, and divide the product by the revolutions of the driver; the quotient will be the size of the driver.

Table, showing the Weight of 1 foot in length of Round Iron, from 1-8 in. to 6 in., in pounds.

Diameter.	Weight in lbs.	Diameter.	Weight in lbs.	Diameter.	Weight in lbs.	Diameter.	Weight in lbs.
$\frac{1}{8}$	.041	$1\frac{5}{8}$	7.010	$3\frac{1}{2}$	25.926	$4\frac{5}{8}$	56.788
$\frac{1}{4}$	.165	$1\frac{3}{4}$	8.128	$3\frac{3}{4}$	28.040	$4\frac{3}{4}$	59.900
$\frac{3}{8}$	.373	$1\frac{1}{2}$	9.333	$3\frac{5}{8}$	30.240	$4\frac{1}{2}$	63.094
$\frac{1}{2}$	.663	2	10.616	$3\frac{1}{2}$	32.512	5	66.752
$\frac{5}{8}$	1.043	$2\frac{1}{8}$	11.988	$3\frac{3}{8}$	34.886	$5\frac{1}{8}$	69.731
$\frac{3}{4}$	1.493	$2\frac{1}{4}$	13.440	$3\frac{1}{2}$	37.332	$5\frac{1}{4}$	73.172
$\frac{7}{8}$	2.032	$2\frac{3}{8}$	14.975	$3\frac{3}{4}$	39.864	$5\frac{3}{8}$	76.700
1	2.654	$2\frac{1}{2}$	16.688	4	42.464	$5\frac{1}{2}$	80.304
$1\frac{1}{8}$	3.360	$2\frac{3}{4}$	18.293	$4\frac{1}{4}$	45.174	$5\frac{3}{4}$	84.001
$1\frac{1}{4}$	4.172	$2\frac{5}{8}$	20.076	$4\frac{1}{2}$	47.952	$5\frac{5}{8}$	87.776
$1\frac{3}{8}$	5.019	$2\frac{3}{4}$	21.944	$4\frac{3}{4}$	50.815	$5\frac{7}{8}$	91.034
$1\frac{1}{2}$	5.972	3	23.888	$4\frac{1}{2}$	53.760	6	95.552

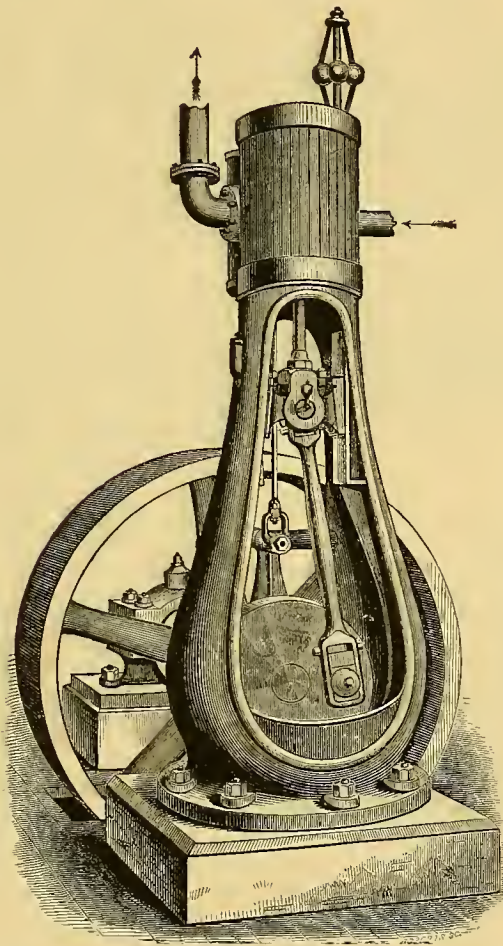
Round Iron, when turned for shafting, reduces the sizes 1-16 of an inch, thus reducing the weight in proportion to its diameter.

Weight of Square Rolled Iron, from 1-16 inch to 12 inches, and one foot in length.

Size in inches.	Weight in lbs.	Size in inches.	Weight in lbs.	Size in inches.	Weight in lbs.	Size in inches.	Weight in lbs.
1-16	.013	$2\frac{1}{2}$	15.263	$4\frac{3}{4}$	64.700	$7\frac{3}{4}$	303.024
$\frac{1}{8}$	.053	$2\frac{1}{4}$	17.112	$4\frac{1}{2}$	68.448	8	216.336
3-16	.118	$2\frac{3}{8}$	19.066	$4\frac{3}{8}$	72.305	$8\frac{1}{4}$	230.068
$\frac{1}{4}$	.211	$2\frac{1}{2}$	21.120	$4\frac{1}{2}$	76.264	$8\frac{1}{2}$	244.220
$\frac{3}{8}$	.275	$2\frac{3}{4}$	23.292	$4\frac{3}{4}$	80.333	$8\frac{3}{4}$	258.800
$\frac{1}{2}$	.845	$2\frac{5}{8}$	25.560	5	84.480	9	273.792
$\frac{5}{8}$	1.320	$2\frac{3}{4}$	27.939	$5\frac{1}{4}$	88.784	$9\frac{1}{4}$	289.220
$\frac{3}{4}$	1.901	3	30.416	$5\frac{1}{2}$	93.168	$9\frac{1}{2}$	305.056
$\frac{7}{8}$	2.588	$3\frac{1}{4}$	33.010	$5\frac{3}{8}$	97.657	$9\frac{3}{4}$	321.332
1	3.380	$3\frac{1}{2}$	35.704	$5\frac{1}{2}$	102.240	10	337.920
$1\frac{1}{8}$	4.278	$3\frac{3}{4}$	38.503	$5\frac{3}{4}$	106.953	$10\frac{1}{4}$	355.136
$1\frac{1}{4}$	5.280	$3\frac{1}{2}$	41.408	$5\frac{5}{8}$	111.756	$10\frac{1}{2}$	372.672
$1\frac{3}{8}$	6.390	$3\frac{3}{8}$	44.418	$5\frac{7}{8}$	116.671	$10\frac{3}{4}$	390.628
$1\frac{1}{2}$	7.604	$3\frac{1}{2}$	47.534	6	121.664	11	408.960
$1\frac{3}{4}$	8.926	$3\frac{3}{4}$	50.756	$6\frac{1}{4}$	154.012	$11\frac{1}{4}$	427.812
$1\frac{5}{8}$	10.352	4	54.084	7	165.632	$11\frac{1}{2}$	447.024
$1\frac{7}{8}$	11.883	$4\frac{1}{8}$	57.517	$7\frac{1}{4}$	177.672	$11\frac{3}{4}$	466.684
2	13.520	$4\frac{1}{4}$	61.055	$7\frac{1}{2}$	190.136	12	486.656

Gear's Illustrated Catalogue.

Patent Vertical Steam Engine.



The Vertical Engine possesses advantages which are destined to bring it into general use for stationary purposes. It has already won its way to universal favor on board our finest screw steamers, where its continuous and rapid working, during long and stormy passages, proves it to be peculiarly fitted to sustain severe labor for long periods. There is no other style of engine which occupies so little room, in which the strains are so well resisted by the framing, or in which the friction is so small and the endurance of all the parts so well secured. The engine shown in the engraving consists of three principal parts: the cylinder, the frame, which is a tapering column of curved outline, having liberal openings in the sides to allow free access to all the working parts within, and the base which elevates the shaft sufficiently for the fly-wheel to clear the floor. The slides and pillow blocks are cast with the column so that they cannot become loose or out of line; the rubbing surfaces are large and easily lubricated. Owing to the vertical position there is no tendency to side wear of cylinder or piston. The packing rings are self-adjusting and work free and tight. These engines, of from two to ten horse-power, are built in quantities and the parts duplicated by special machinery (as in fire-arms and sewing machines), which secures great accuracy and uniformity of workmanship, and allows of any part being quickly and cheaply replaced, when worn or broken by accident. All sizes above a ten horse-power have a bearing outside the fly-wheel, and this bearing, as well as that in the frame, and both ends of the connecting rod, are made self-adjusting to the line of the bearing surfaces, so that if, by the settling of the foundation or other cause, the engine "gets out of line," the bearings will not heat, cut, or thump.

Deane's Illustrated Catalogue of

Portable Engine.

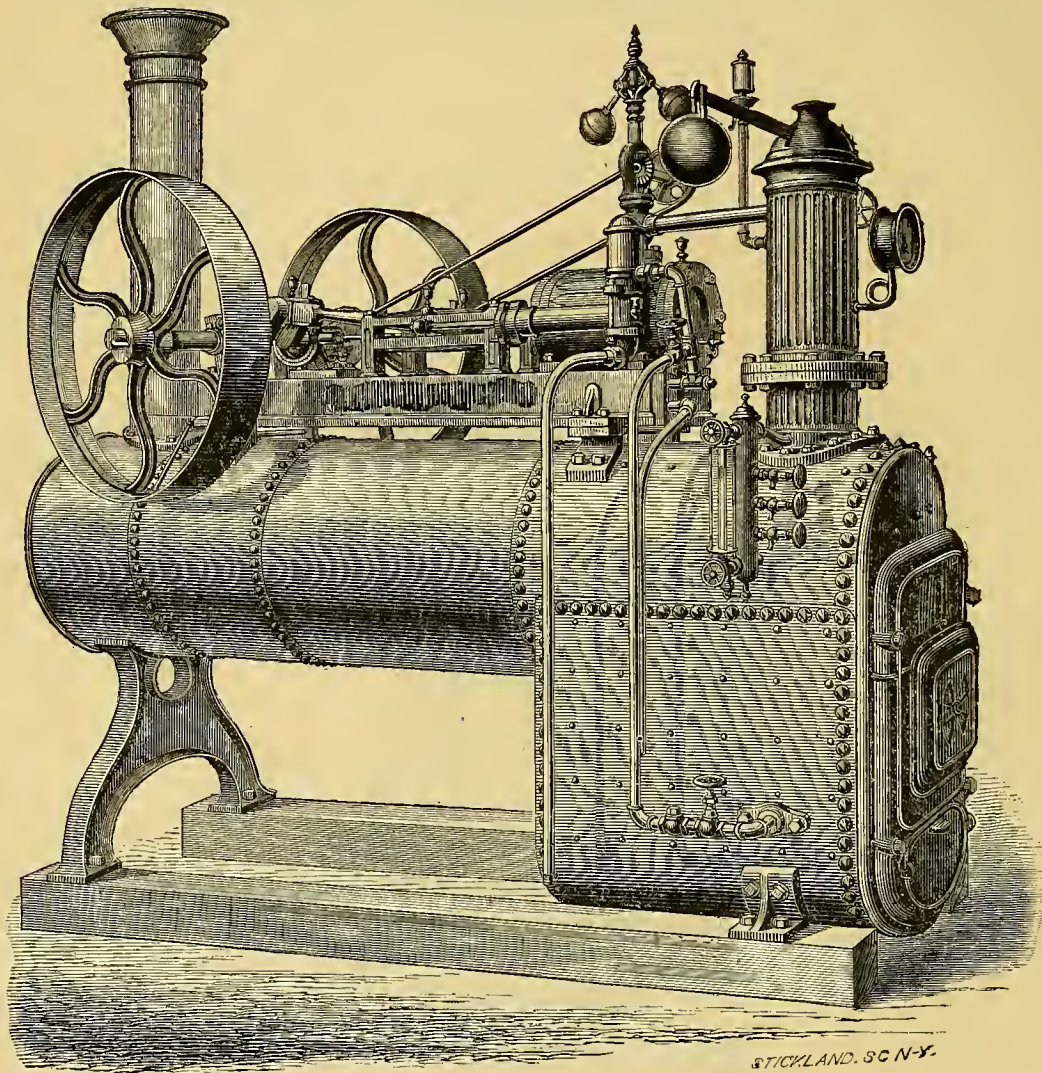
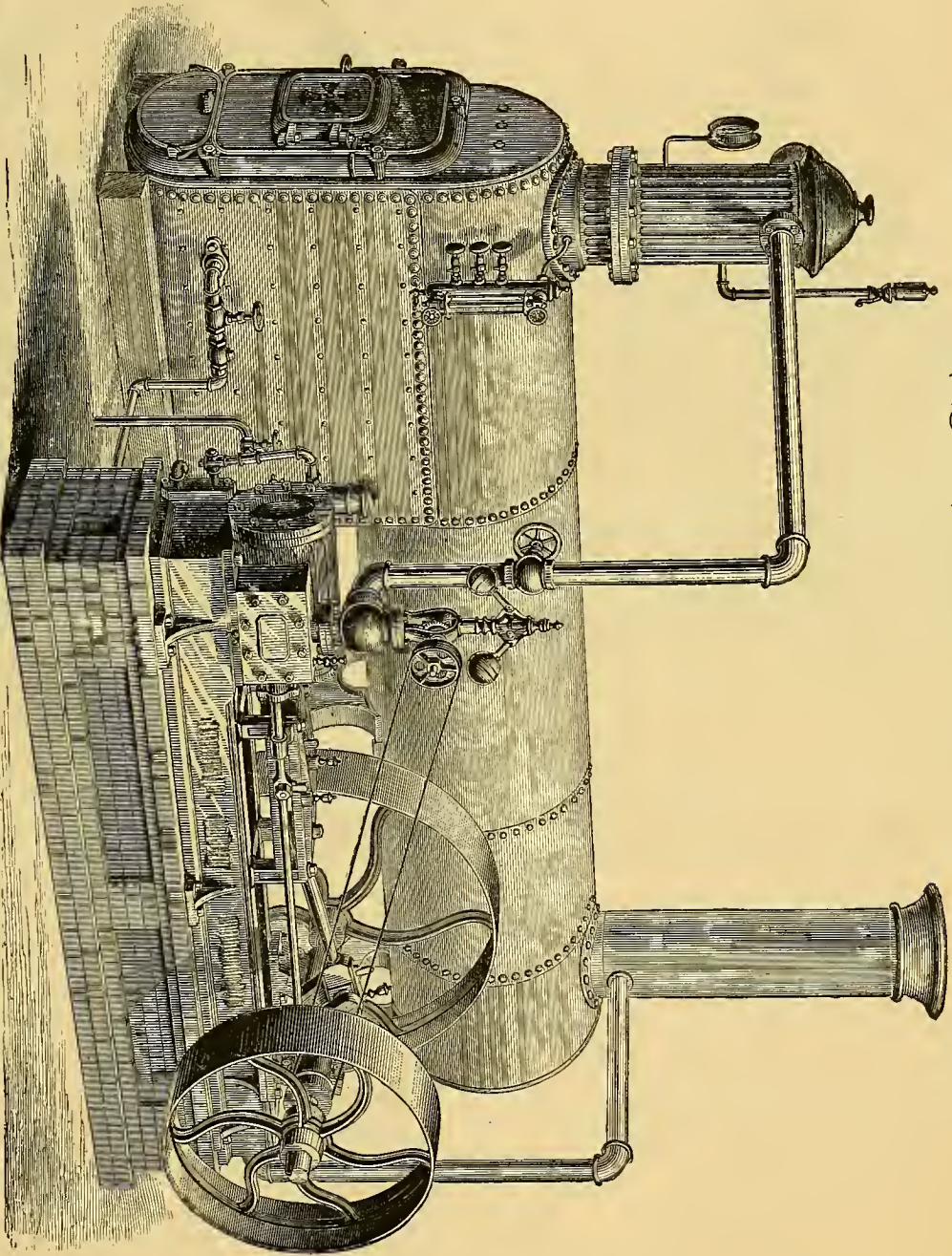


Table and Dimensions of Portable Engines.

NUMBER.	CYLINDER.		BOILER.							FLY WHEEL.		Revolutions per minute.	Estim'd weight of Engine and Boiler in lbs.	Horse-Power as usually rated.	
	Diamet'r in inches	Stroke in inches	Diamet'r of Waist.	FIRE BOX.			TUBES.				Diam'ter in in.				Faces in inches
				Len'th in in.	Width in in.	Heigh't in in.	Num-ber.	Diam. in in.	Len'th in in.						
0	3½	6	23	23	18	16	18	2	41	9&20	3½	250	1,700	3 to 4	
1	5	10	24	34	18	26	21	2½	51	24 40	5&6	175	2,700	5 to 6	
2	6	10	27	36	22	32	20	3	60	40 40	6	175	3,900	7 to 8	
3	7	10	29	36	24	34	22	3	60	30 42	8	175	4,900	9 to 10	
4	8	10	32	38	26	36	24	3	68	30 44	8	175	5,800	11 to 12	
5	8	12	32	38	26	37	27	3	68	30 48	8&10	150	6,800	13 to 15	
6	9	12	33	52	27	37	29	3	82	40 54	8 12	150	7,200	15 to 18	
7	10	12	35	52	29	38	34	3	82	44 54	8 12	150	7,700	20 to 25	
8	10	16	37	52	31	41	39	3	100	48 60	10 12	130	10,800	25 to 30	
9	11	18	39	52	33	48	45	3	112	60 72	12 12	110	12,200	30 to 35	
10	12	18	39	52	33	49	45	3	124	60 72	12 15	110	13,850	35 to 40	

Weed Iron Working Machinery.

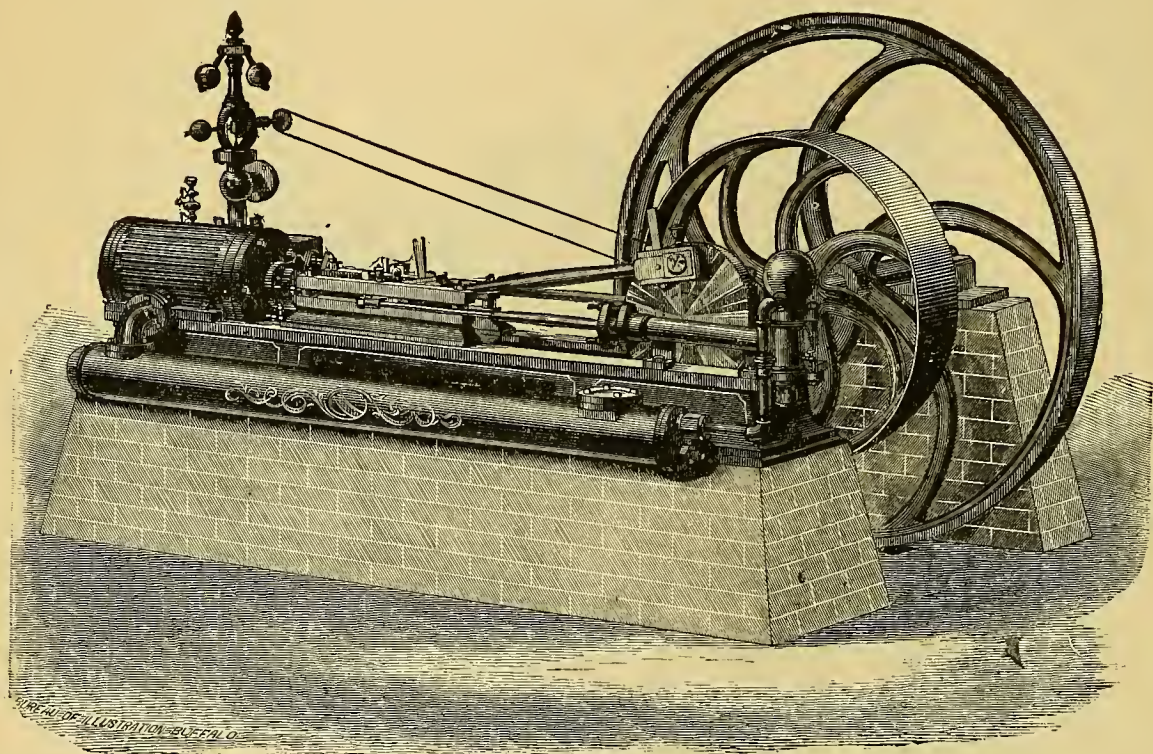
Portable Engine, erected as a Stationary.



The above cut illustrates some of the important advantages of these "Portables." As regularly made, the engine may, at pleasure of owner, be used on top of boiler, or detached from it, as shown above, thus combining the adaptability of either form for any location, as is sometimes the case when an order specifies that the engine will be used as a stationary, the foundation saddles for engine on top of boiler are left off, as represented by the cut. Outside of the effect on the appearance of the boiler, however, it is immaterial when the engine is so used, whether they are put on or not. It will be necessary to send us a sketch, showing relative position of engine and boiler, and their distance apart, when intended to be run "stationary," in order to send with them suitable connecting pipes, which will be charged for according to extra quantity required over that furnished for Portables.

Gear's Illustrated Catalogue of

Slide Valve Engine Nos. 1 to 6.



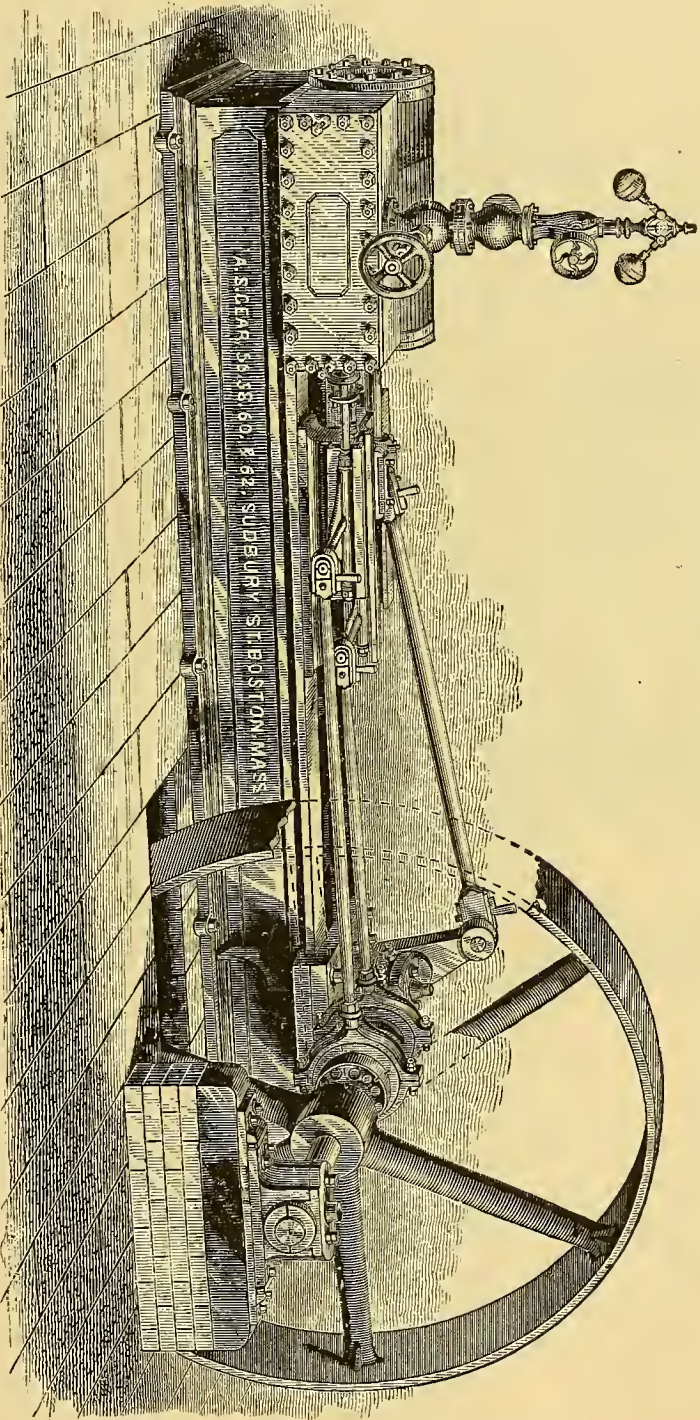
Number of size.....	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Horse-power,	8	10	12	15	18	20	25	30	40	50	70	90	100	125
Diameter of cylinder (in inches).....	..	7	7½	8	9	10	10	12	12	14	16	18	18	20
Length of stroke.....	..	10	12	12	12	12	15	15	18	18	24	24	30	30
Ordinary number of revolutions.....	..	175	150	150	150	150	140	140	125	125	100	100	80	80
Diameter of steam pipe (in inches).....	..	1½	1½	2	2	2½	2½	3	3	3½	4	4½	4½	5
Diameter of exhaust pipe (in inches).....	..	2	2½	3	3	3½	3½	4½	4½	5	5½	5½	5½	6
Diameter of pulley (in inches).....	..	30	36	36	36	36	42	42	48	48	60			
Face of pulley (in inches).....	..	8	8	9	11	11	13	13	15	15	17			
Diameter of fly-wheel (in inches).....	..	54	60	60	62	72	84	86	108	110	120			
Weight of fly-wheel (in pounds).....	..	500	600	600	700	900	1200	1500	2000	2500	3000			
Diameter of shaft (in inches).....	..	2½	3½	3½	3½	3½	3½	4½	4½	5½	5½	6½	6½	7½
Length of shaft from center of engine (in feet).....	..	5	5	5	5	5½	6	6	7	7	8	8	8	8
Length of bed frame (in feet).....	..	6½	7½	7½	7½	7½	8½	8½	10½	10½	13½	13½	17	17
Width of bed frame (in inches).....	..	16	17	17	18	18	19	19	23	23	27½	27½	31	31
Length of journal (in inches).....	..	6	6½	6½	6½	9½	9½	12	12	12	13½	13½	13½	15

SIZES OF BALANCE-WHEEL PULLEY THAT WILL BE SUBSTITUTED FOR THE FLY-WHEEL AND PULLEY IN ABOVE TABLE AT SAME PRICE.

Diameter (in inches).....	..	54	54	60	60	72	78	84	96	96	96			
Face (in inches).....	..	8	9	9	11	11	13	13	15	15	17			

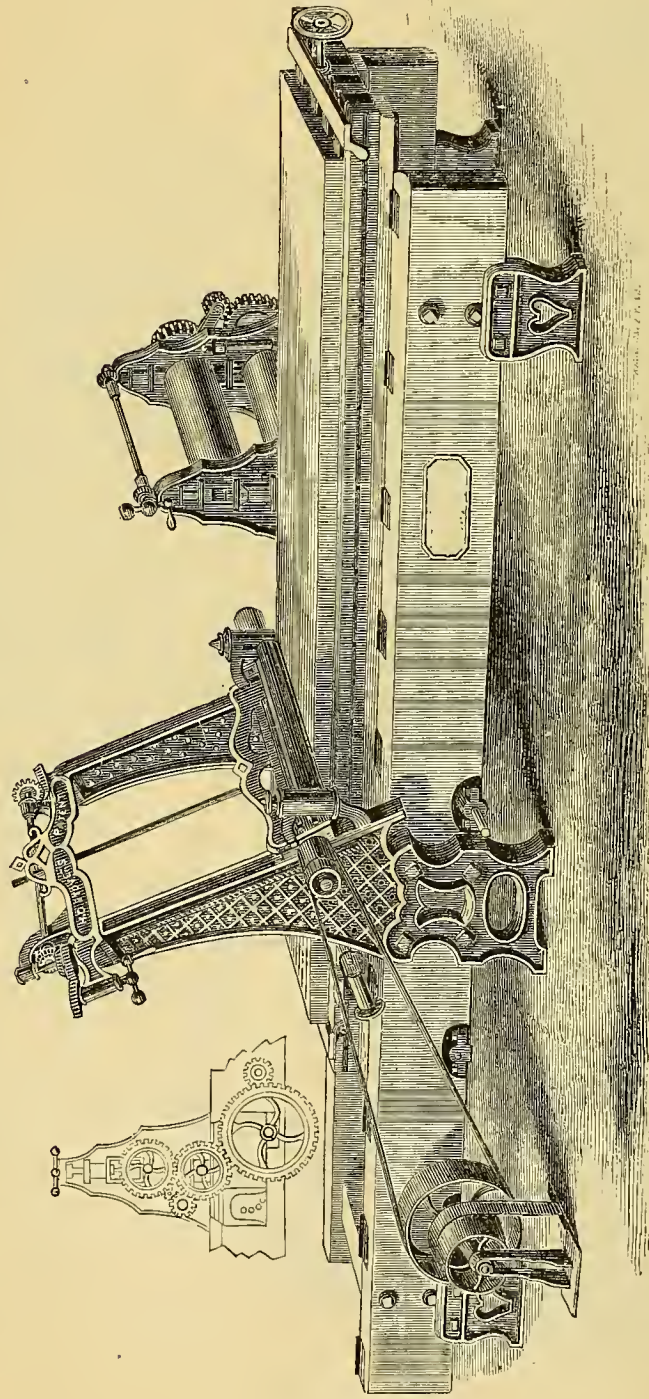
Improved Horizontal Stationary Engine,

With or without Adjustable Cut-Off, as desired.



All the parts of this engine are of the best material and workmanship. The main journals run in brass quartering boxes. The Cross Head has brass gibs, and the Piston-rods and Crank-pin are of forged steel. It has Oil-cups, Regulating Governor, and Steam Stop-valve, and a Balance Pulley or Fly-wheel. There are twenty-four sizes of this engine, from fifteen to one hundred horse-power. The diameters of cylinders range from eight to twenty inches, with stroke from twelve to thirty-six inches. We have on hand at all times a number of sizes finished complete, ready for delivery, and also a portion of each size—cylinders, &c., (finished)—enabling us to furnish complete and deliver any size at very short notice, and, consequently, at low prices.

Patent Improved Combination Wood Planer.

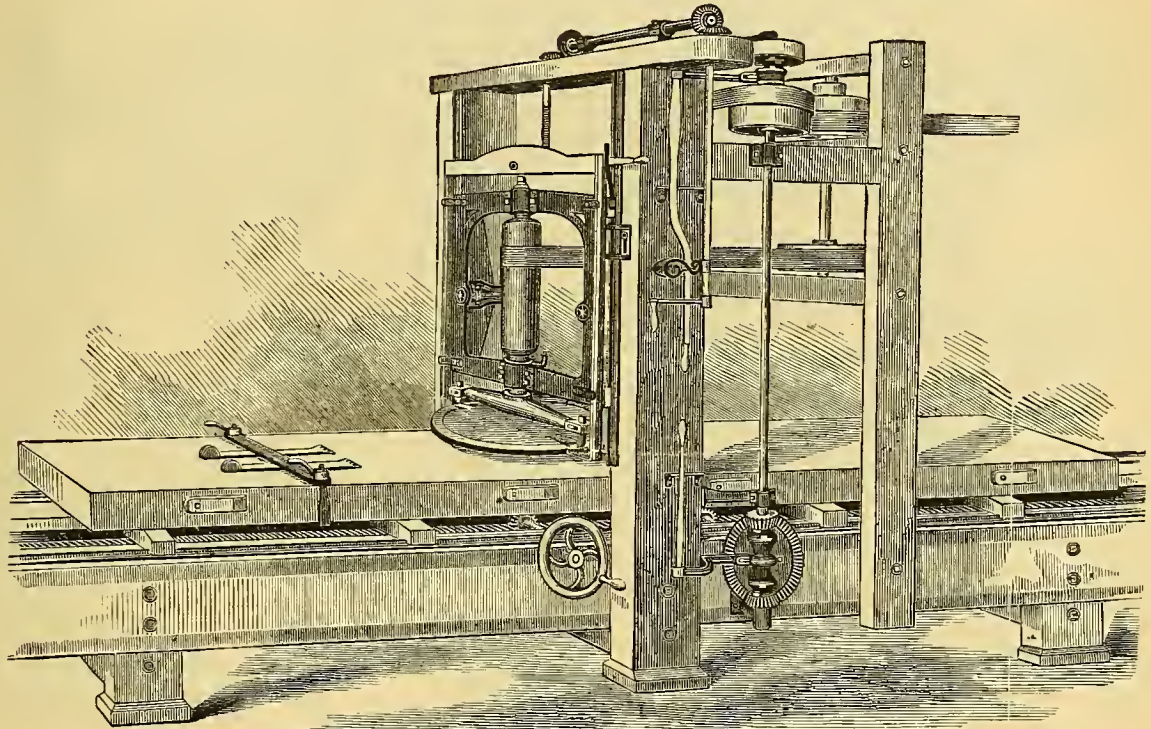


The above cut shows the machine as arranged for planing straight and out of wind, and squaring up and surfacing heavy and dimension timber or boards. The Platen is moved backward and forward by means of a back-feed, and so arranged as to run back twice as fast as forward, being moved either way by simply moving a lever; and the jar of starting a piece of heavy work is wholly obviated, thus making it impossible to strip any teeth. It is also so formed as to make a heel or cap iron for the Cutting Knives, being adjustable, like a hand planer, for the purpose of cutting fine or heavy, in either hard, soft, straight or heavy grained wood, as the case may be. The Heel Iron, formed on the Cutting Cylinder, is so constructed as to break the chip and cause it to be thrown from the cylinder as soon as cut, thus making the action of the Cutting Cylinder perfectly free by the action of the recesses and pressure edge. The Cutting Cylinder is moved by means of screws attached to each end of its *Cross-head*, which are placed outside of the posts, away from the dust and shavings, and thus securing it exactly parallel with the face of the Platen, either in its elevation or depression. The Cutting Cylinder is run in long boxes, which are lined with Babbit metal, and supplied with a new and superior arrangement for oiling the boxes, so they can never heat. The Cross-head is secured to the upright post by means of a gib, and can be adjusted very readily, thus preventing any side motion or insecurity; it is also arched in the centre to allow the free exit of shavings. The Feed Rolls, or Woodworth attachment, for surfacing only, is shown in the cut as thrown out of gear, the position they occupy when not required for use; when wanted the Platen is run out of gear and the Feed Rolls are pushed into place, running into gear, and securing themselves perfectly solid as if constructed in the place—the time required to shift from planing straight and out of wind to that of surfacing being merely nothing. The whole machine is built in the most thorough manner, and is warranted in every respect.

The Iron Frame being built wholly of iron is especially adapted for Railroads.
 The Heavy Wood Frame is built extra heavy, all the iron work being as heavy as the iron frames.
 The Wood Frame is for general work, and is warranted in all respects.

Wood and Iron Working Machinery.

Improved Patent Daniels Planing Machine.



The Most Perfect Dimension Wood Planing Machine in use.

It is made to true out, square up and bevel, with the utmost precision, hard and soft wood, the heaviest dock, ship, bridge, railroad car and mill work, any length or width, and is easily applied to the largest or smallest carpenter's work, machinery, sash and doors, piano fortes, cabinet, coach and carriage work, fancy toys, and almost everything made of wood. It planes both forward and back, and gigs rapidly—both ways if desired. All feed belts are overhead, and shipper handles are convenient and safe to use.

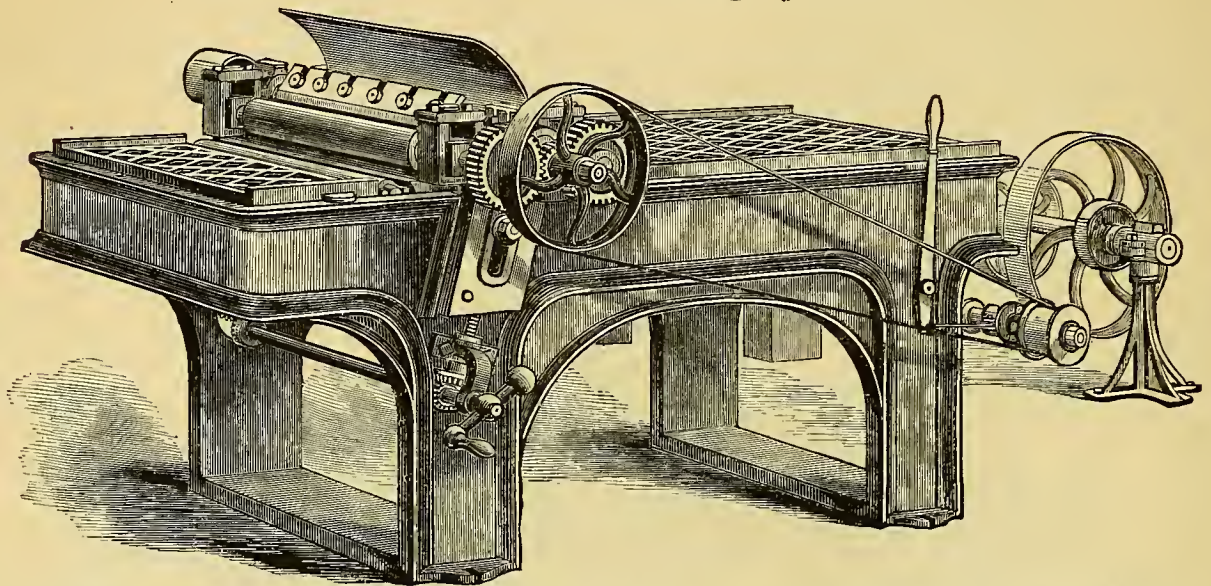
A new PATENT HOLLOW ARM is made of malleable iron, annealed inside and out, making it nearly as tough as wrought iron, and its shape affords far less resistance to the air, requiring less power to operate it than any arm in use. The method of fastening the cutters is not only perfectly safe, but enables it to plane the full rated width, with the dead weight on, thus gaining from three to four inches over all other arms of equal length. These improvements, together with the dead weight and iron rolls, are of such advantage that they are put on all machines, if not otherwise ordered, and no extra charge made.

In ordering, care should be had to mention the width required to be planed. All machines less than 18 feet long, and 27 inches wide, will be fitted with a 12 inch pulley, 4 inch face, and should revolve 500 times per minute, which gives 1500 revolutions to the arm. Larger machines will have larger pulleys, and should have speed in proportion to the length of the arm. If desired, the Screw Hold Fast can be attached to the carriage of this machine, at an extra charge, according to the size.

The PRICE LIST of these Planing Machines includes all modern improvements in general use, boxed and delivered on railroads, well marked for shipping.

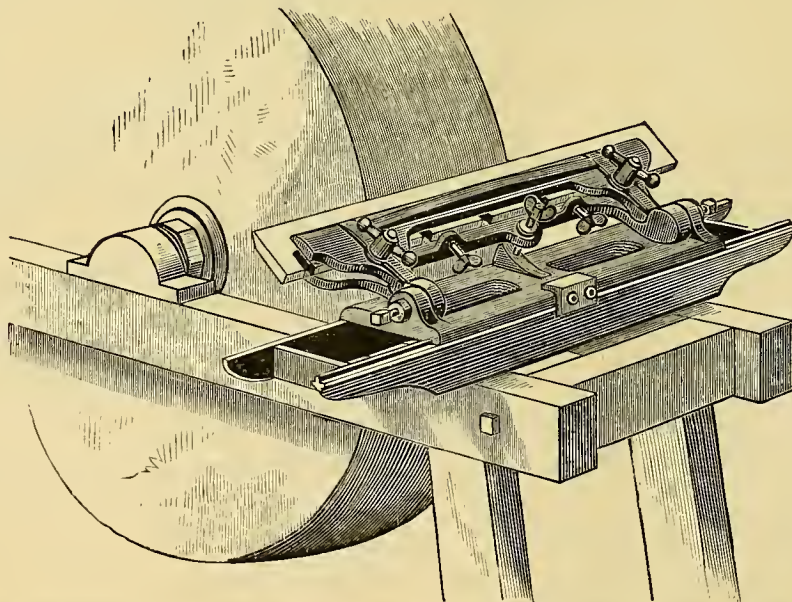
Gear's Illustrated Catalogue of

Woodworth Surfacing Machine.



This cut represents a small SURFACING MACHINE, with two Top Feed Rolls attached to the Cutter Head Slides, which move up and down with the Head. This machine is well adapted for shop work—for Carpenters, Box and Cabinet Makers, or any kind of light planing. The Frame is made of cast iron, heavy and substantial; the Cutter Cylinder is of solid cast steel. The Rolls are weighted in a very convenient manner, and will plane stuff to $3\frac{1}{2}$ inches thick, and 24 inches wide. The tight and loose Pulleys are 12 inches diameter, 6 inch face, and should make 800 revolutions per minute. Weight, 1,400 pounds.

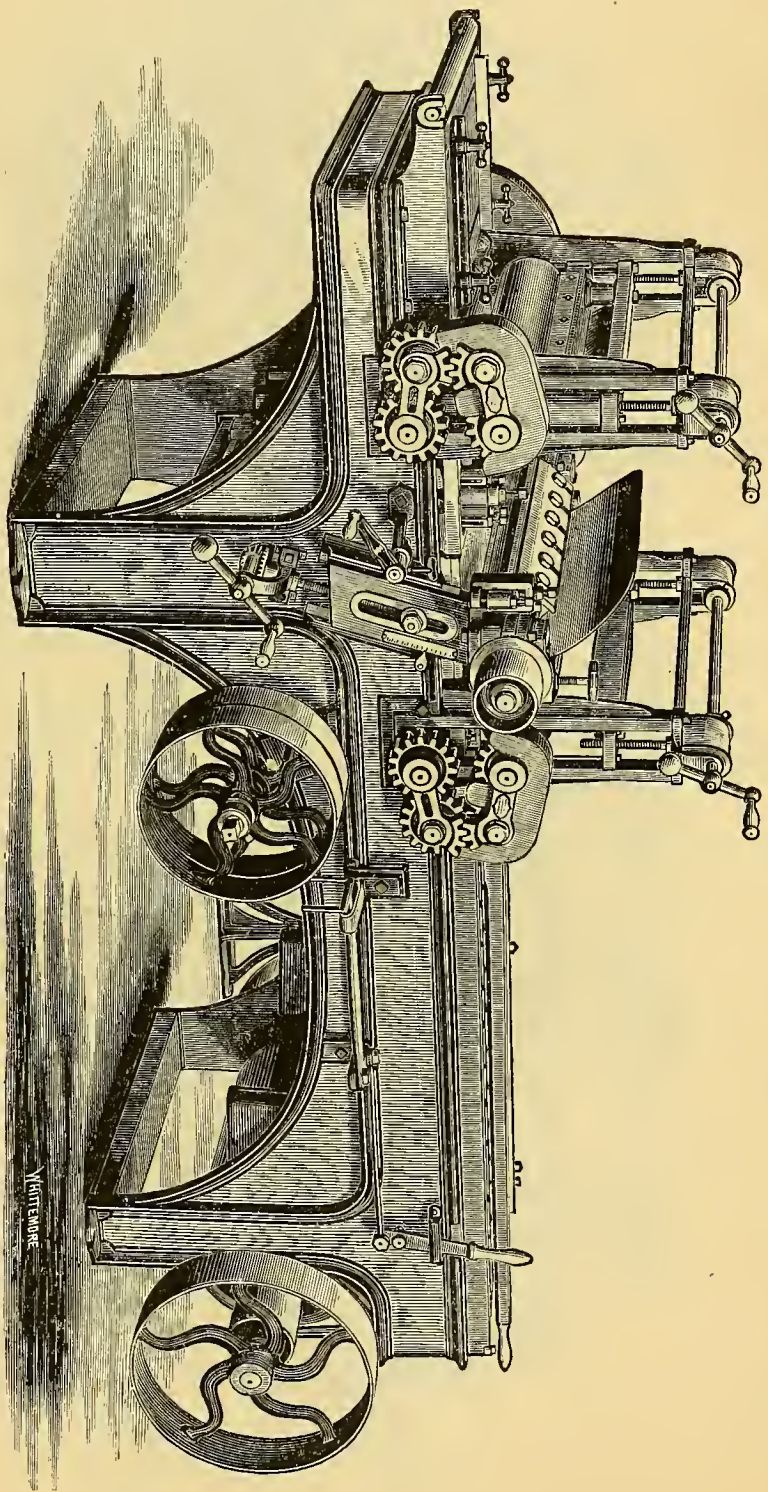
Grinding Machine.



This machine is constructed particularly for grinding Woodworth Planer Knives and Matcher Cutters. It consists of a Bed and Sliding Carriage. The bed can be placed upon any common grindstone frame. The knife is firmly clamped to the carriage, which is moved back and forth by hand, and can be elevated or depressed to grind any bevel desired. By the use of this machine the knives are kept perfectly straight, and of course will do much more perfect work than if ground by hand. No planing mill is perfect without one, and the cost is but a trifle.

Wood & Iron Working Machinery.

Patent Improved Woodworth Planing, Tonguing and Grooving Machine.



No. 1. Weight, 3,300 Pounds.

This machine has been constructed to meet the wants of a large class of purchasers throughout the country,—Carpenters and Builders, small Planing Mill owners, Box makers, and many others who do not wish to incur the expense of the larger machines.

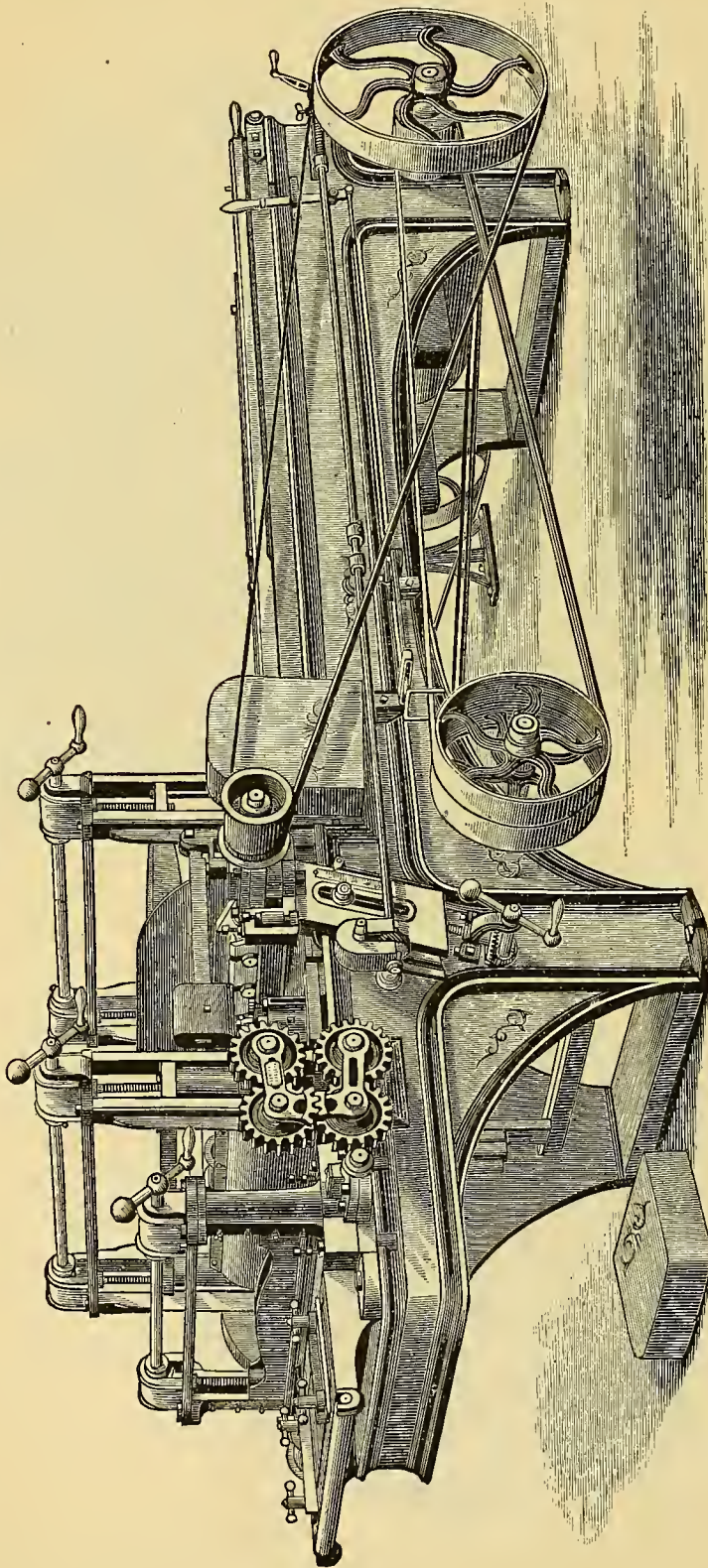
It has four five-inch Feed-Rolls, with BURLINGTON'S PATENT EXPANSION FEED GEAR LINKS; also, a patent improved weighting applied to the Rolls in front of the Cutter Head, which gives an equal pressure not affected by any inequality in the lumber. The CUTTER CYLINDER is solid cast steel, running in Patent Self-Oiling Boxes, lined with the best quality of Babbitt metal, and has an Index to gage the thickness of the board. The Matcher Spindles are made of the best cast steel and are lowered below the line of the bed by loosening one bolt to each. The gears are all protected with substantial iron covers, to prevent breakages and accidents.

This machine will plane, tongue and groove 14 inches wide, and will plane 24 inches wide and 4 inches thick, when the Matcher Heads are off. The Matcher Head is moved by a crank at the side of the machine.

Tight and loose Pulleys, 12 inches in diameter, 6 inches face, and should make nine hundred revolutions per minute.

Improved Woodworth Planing, Tonguing and Grooving Machine.

New Patent.



No. 2. Weight, 4,600 Pounds.

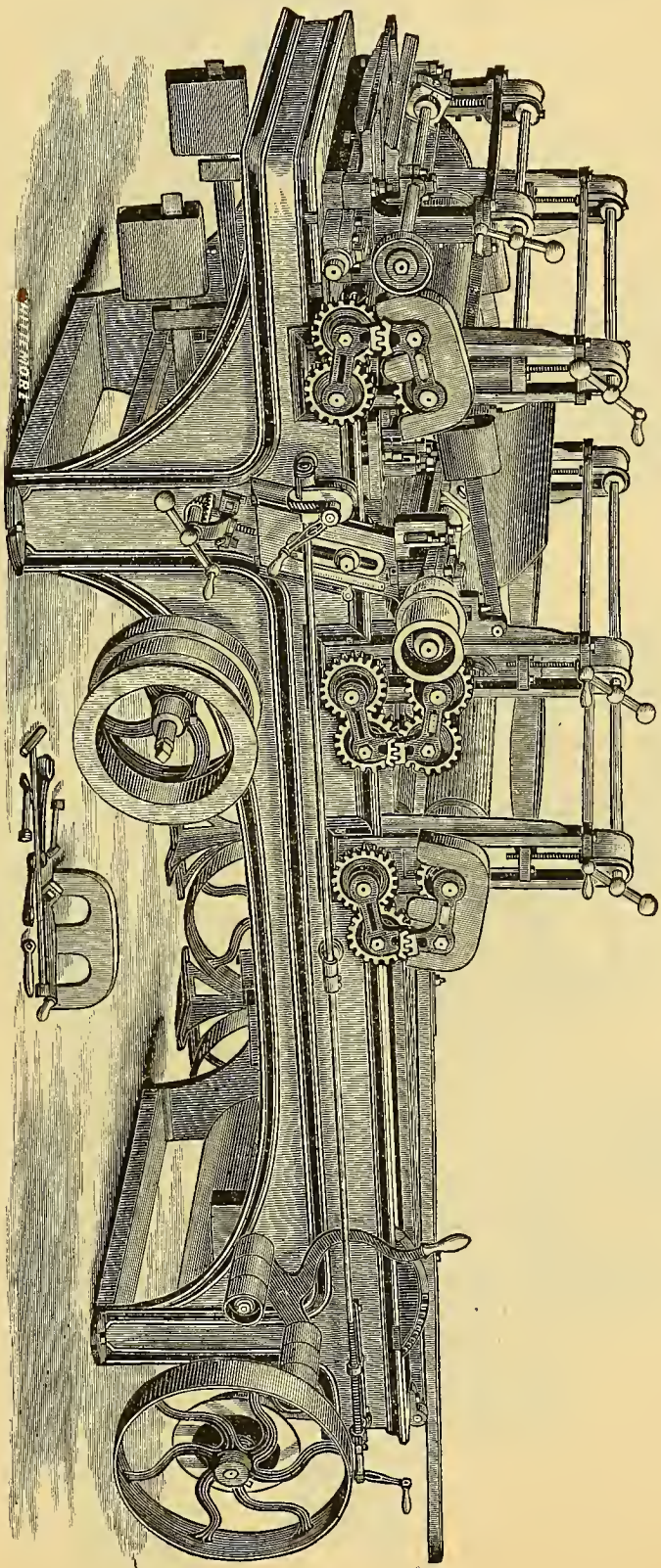
This machine has been perfected with great care, and is built from new patterns of the most approved styles, with BURLINGTON'S PATENT EXPANSION FEED GEAR LINKS; also, an IMPROVED WEIGHTED FEED ROLL, self-adjustable to the variations in thickness of lumber. The Rolls are weighted so that the lumber passes through before it reaches the Cutter Head, giving at all times an equal pressure in all irregularities of the lumber which cannot be obtained otherwise. It has four 6-inch Feed Rolls; the Cutter Head is 6 inches diameter, carries three Cutters, is made of solid wrought iron, with cast steel arbor, running in the best Babbitt-lined PATENT SELF-OILING BOXES. The Matcher Spindles are lowered below the surface of the table by a slight turn of a hand wheel to each. All the gears are protected by substantial covers, thereby preventing breakages or accidents.

It will plane, tongue and groove four-teen inches wide. Will plane 24 inches wide and 5 inches thick when the Matcher Heads are off. The Matcher Head is moved by a crank, both on the end and side of the machine, with an Index to gage the width and thickness of the board. Tight and loose Pulleys, 14 inches diameter, 6 inch face, and should make 750 revolutions per minute.

Wood and Iron Working Machinery.

Improved Woodworth Planing, Tonguing and Grooving Machine.

New Patent.



No. 24. Weight, 6,100 Pounds.

This machine has been constructed with special reference to the wants of Job Planing Mills. It will double surface, tongue and groove, and bead and rabbet at one operation, if desired.

It can be changed from one kind of work to another *instantly*, with the same ease as changing from one width board to another. It is made to tongue and groove the full width it will surface. By this arrangement all trouble and loss of time is avoided by removing the Side Heads and dropping down the Spindles, in the changing from tonguing and grooving to surfacing, and *vice versa*. The Side Heads do not require to be dropped down for any kind of work. The Cutter Head is six inches in diameter, carries six cutters, is made of solid wrought iron, with cast steel arbors, running in the best Babbit-lined Self-Oiling Boxes.

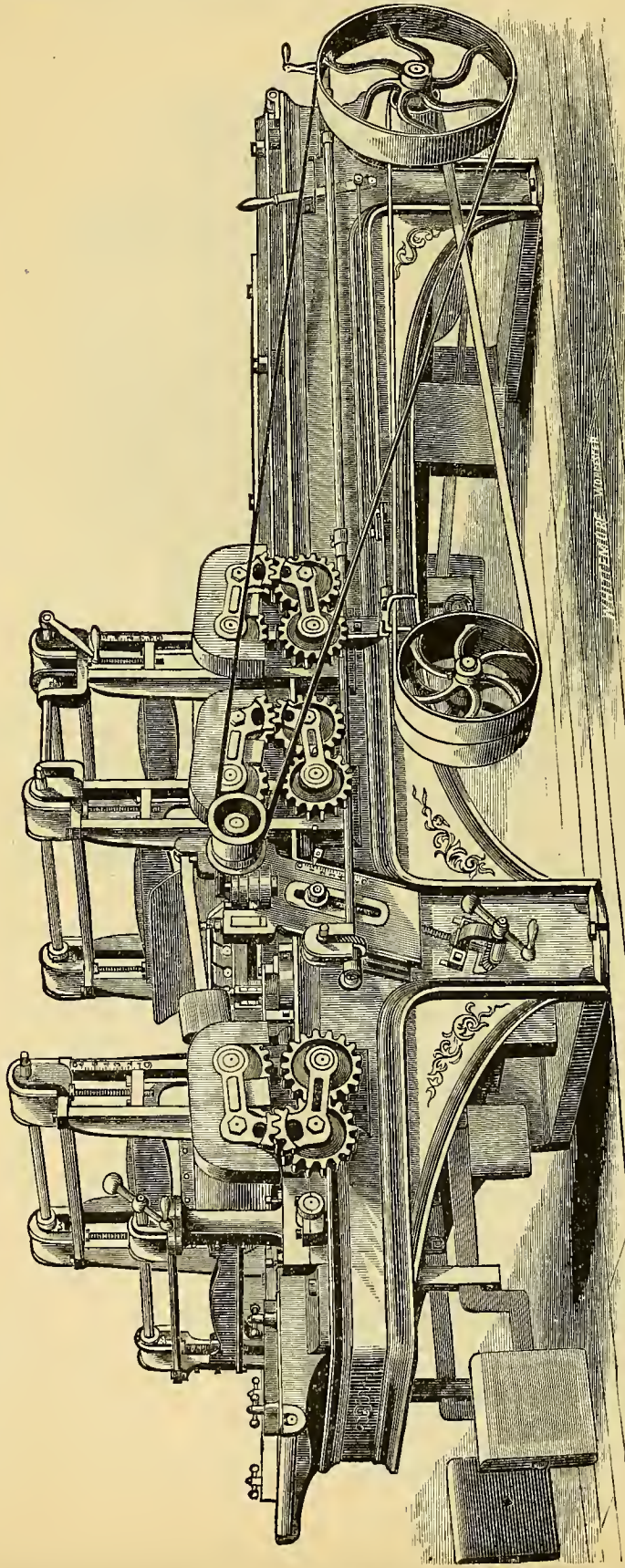
The Feed Shaft is driven by Cone Pulleys, with three changes, and can be changed from one speed to another with the same ease as changing the speed of a common turning lathe. All the gears are protected by substantial covers, thereby preventing breakages or accidents.

It will plane, tongue and groove 24 inches wide; plane 5 inches thick. Tight and loose Pulleys 14 inches diameter, 6 inch face, and should make 750 revolutions per minute.

Length of Belt, 37 feet of 4 inch, for Upper Cylinder; 18 8-12 feet of 4 inch, for Under Cylinder; 35 9-12 feet of 3 inch, for Matchers; 14 10-12 feet of 3 inch, for Feed.

Gear's Illustrated Catalogue of

Patent Improved Woodworth Planing, Tonguing and Grooving Machine.



No. 3. Weight, 7,800 Pounds.

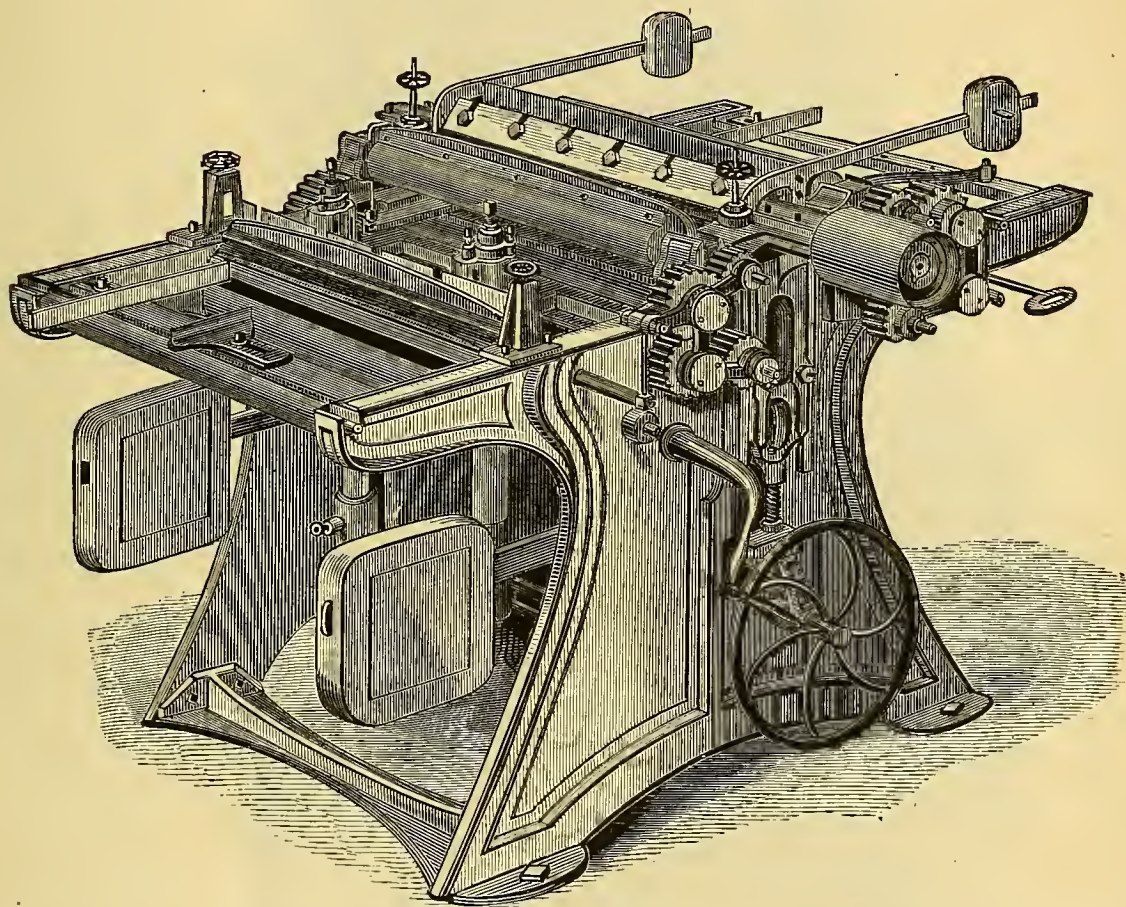
This machine has been perfected with especial reference to the wants of Planing Mills, and of making it the most perfect machine of the kind ever offered to the public. The Frame is thirteen feet long, heavy and substantial. The Bed has a false top, which can be easily removed whenever it needs truing up. It has six 8-inch Feed Rolls, with heavy substantial gears, combined with Burleigh's Patent Expansion Gear Links, which are much superior to any others ever used. It is a very strong feeder. The Cutter Cylinder is 6 inches in diameter, carries three cutters, is made of solid wrought iron, with cast steel journals, and has flange pulleys on each end for five inch belts. The Matcher Spindles are lowered down below the surface of the Bed by simply loosening one bolt to each. The Matcher Heads are made of the best of gum metal and carry three Cutters. The Cutter Cylinder and Counter Shafts run in Patent Self-Oiling Boxes of superior style.

The Feed Rolls and Cutter Cylinder have each an Index for the thickness; the Matcher Bar has an Index for the width, and is adjusted by a crank both at the end and side of the machine. The two sets of Rolls before the Cutters are raised or lowered at the same time, making much saving of time. The Rolls are all weighted, including the Pressure Roll before the Cutters. It will plane, tongue and groove 14 inches wide. Will plane 24 inches wide and 6 inches thick when the Matcher Heads are off. Tight and loose Pulleys 14 inches in diameter, 8-inch face, and should make 750 revolutions per minute.

Length of Belt, 38 6-12 feet of five-inch for Upper Cylinder; 29 2-12 feet of four-inch for Under Cylinder; 39 8-12 feet of three-and-one-half-inch for Matchers; 14 1-12 feet of four-inch for Feed.

Wood & Iron Working Machinery.

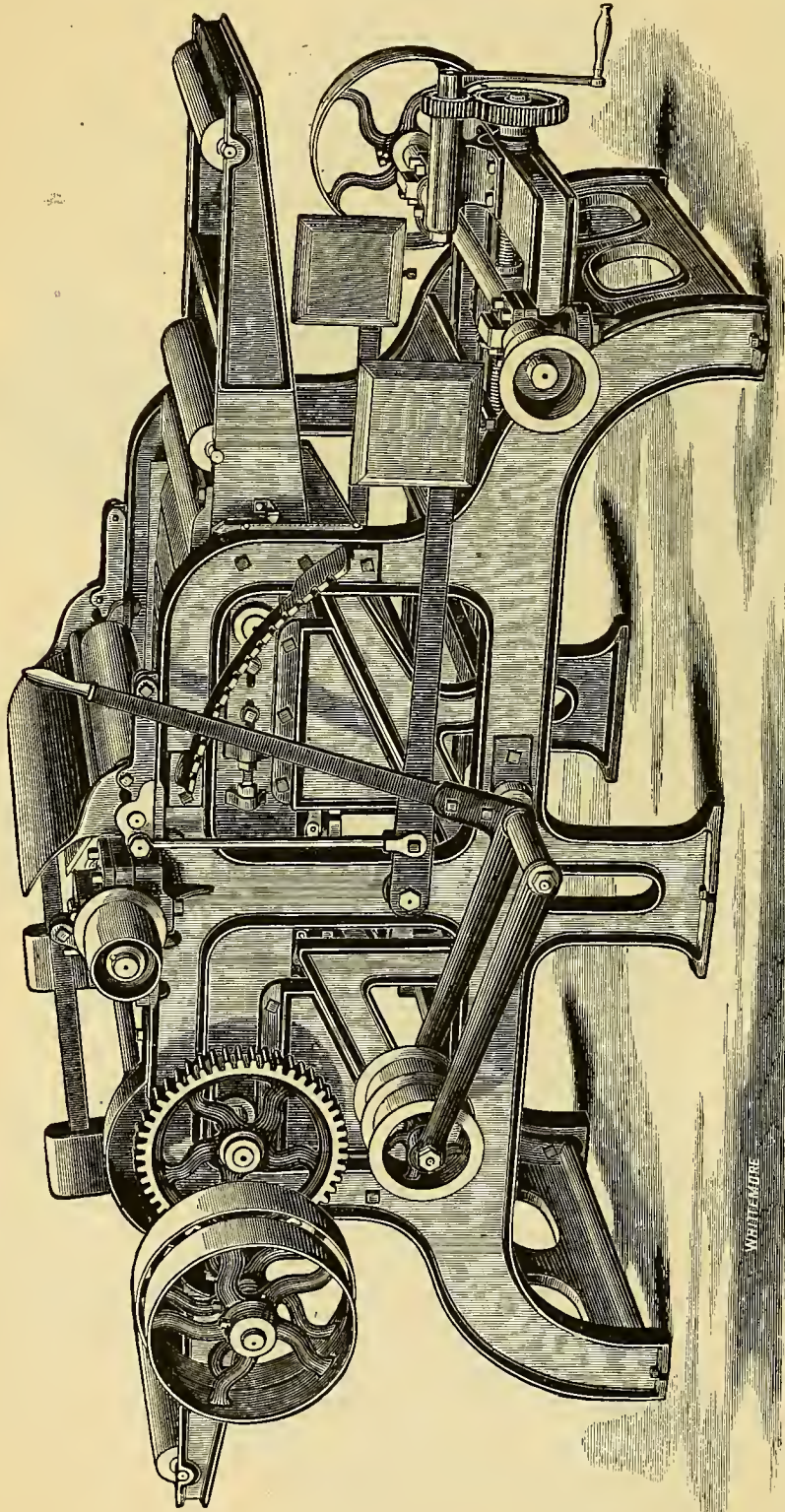
Poney Planing and Matching Machine.



These are the smallest Planers and Matchers built, and being a very excellent machine, at a moderate price, they have had a great run since they were first got out, and are giving universal satisfaction to the many who have them in use. It is a very compact machine, occupying a space of four feet square on the floor. It is fitted with a wrought iron Cylinder with two Knives, and Steel Arbors running in Self-oiling Boxes; gun metal Matcher Heads, three Adjustable Pressure-bars—one of them weighted; the four Rolls are all geared and driven by our Patent Expansion Gearing. The machine planes and matches 13 inches wide and $3\frac{1}{2}$ inches thick, and the Matcher Shafts may be dropped out of the way in a moment, and make it a plain surfacer to work 24 inches wide. The Cylinder and Top Rolls all raise together by one Hand-wheel. It will plane and match 7,000 to 9,000 feet of flooring per day. We make the Cylinder to drive with one or two belts—the double belt costing a little more than single. Each machine has a Counter-shaft with tight and loose Pulleys 10 inches in diameter, 6 inch face, and should make 900 revolutions per minute—giving the Cylinder 4,000. Weight of machine, without boxing, 2,200 pounds.

Belting required: 13 feet of 4 inch belt for single Pulley Cylinder, or 26 of 4 inch for Double Pulley; $26\frac{1}{2}$ feet, $2\frac{1}{2}$ inch belt, for Matcher Shafts; 10 feet 4 inch belt for Feed. The main Driving Belt should be $5\frac{1}{2}$ inch.

Farfar's Endless Bed Surface Planer.



Weight, 4,100 Pounds.

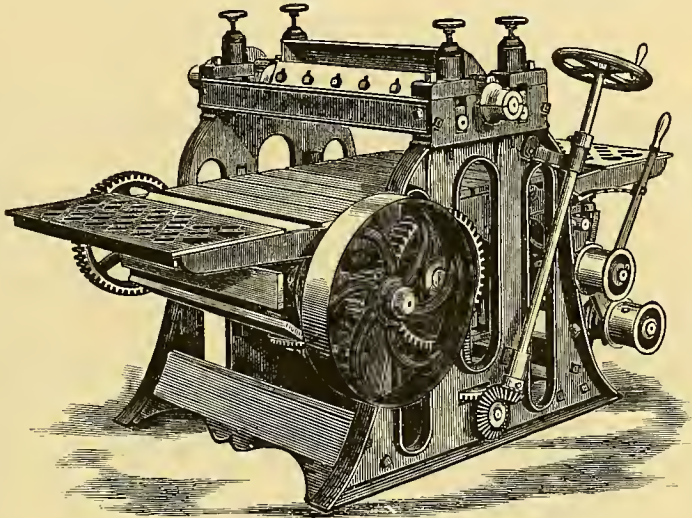
This machine is adapted to the work of Ship Yards, Car Shops, Lumber Mills, or any work where HEAVY or RAPID surfacing is required to be done. It is the heaviest machine ever built of its class, made entirely of iron and steel, very compact, strong throughout, and not liable to get out of repair. The Bed Rails are faced with steel. The Cutter Cylinder is made of solid wrought iron and carries four cutters, which allows much faster feed than other machines. The Rolls are both weighted with independent weights at each end. The Bed is raised or lowered on inclines, so arranged that in changing from one thickness to another there is no loss of time. This machine will plane from $\frac{1}{4}$ to 6 inches in thickness, and it is especially adapted for green, wet, dry or thick lumber.

We can recommend this machine to be first class in every respect, as regards quality of stock and workmanship, or quantity and quality of work which it will do. Tight and loose Pulleys, 14 inches diameter, 6 inch face, and should make 750 revolutions per minute. Each machine is furnished with a counter-shaft.

WRIGHT & CO.

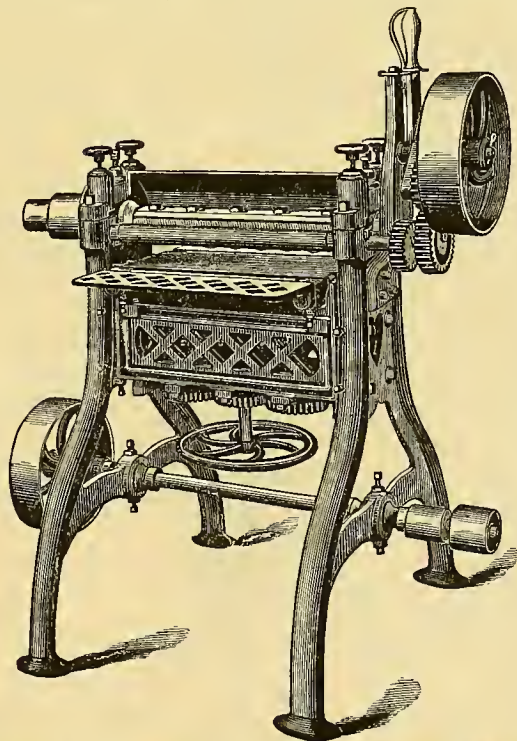
Wood & Iron Working Machinery.

Rotary Bed Surface Planer.



This cut represents a Rotary Bed Surfacer, which is adapted to all kinds of planing, both light and heavy. The Bed Rails are faced with hardened steel. The Cutter Cylinder carries three Cutters. The Feed is back geared, making it a faster and stronger feed than any other machine made. The Bed Rail is gibbed on to the Frame, and raised or lowered by screws, and is easily changed from one thickness to another without loss of time. These machines are built to plane from 24 to 30 inches in width, and 10 inches thick.

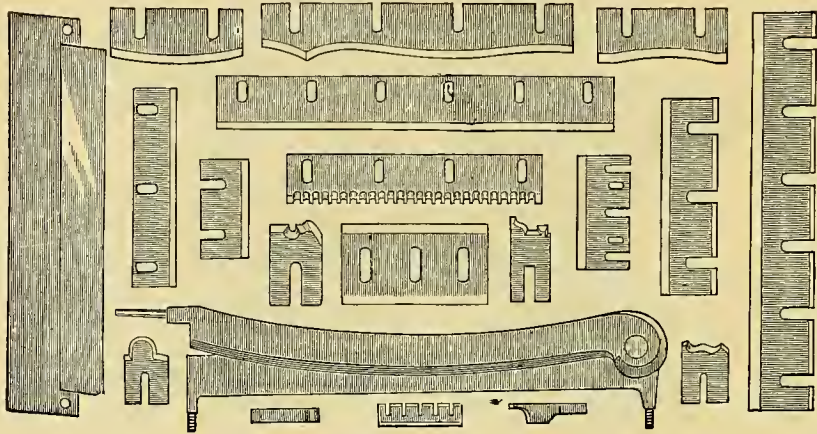
Improved Panel or Surface Planer.



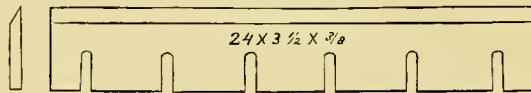
This machine is adapted to the work of Cabinet Furniture Makers, Organ Makers, Car Builders, or for any work where an *extra* smooth surface is required. It is made entirely of iron and steel, very compact, strong throughout, and not liable to get out of repair. The Cutter Cylinder is made of solid steel, and carries two cutters. It has, also, an improved reversible feed. There are eight different sizes, and they are made to plane from 12 to 36 inches wide and from 3 to 5 inches in thickness.

Gear's Illustrated Catalogue of

Planing Knives.



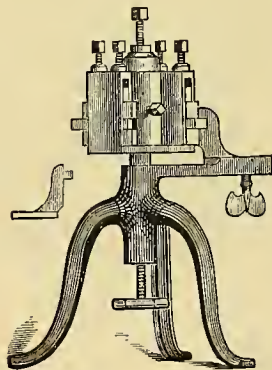
We can furnish Planing Knives of any style or dimension, at short notice. The following directions should be observed when ordering Planing, Matching or Moulding Knives:



DIRECTIONS FOR ORDERING KNIVES.

Place the knife face down upon the paper; mark around to give the length, width and position of the slots; then turn the knife upon the end and mark around to give the thickness and bevel. Be careful and give original dimensions on the pattern, thus— $24 \times 3\frac{1}{2} \times \frac{7}{8}$.

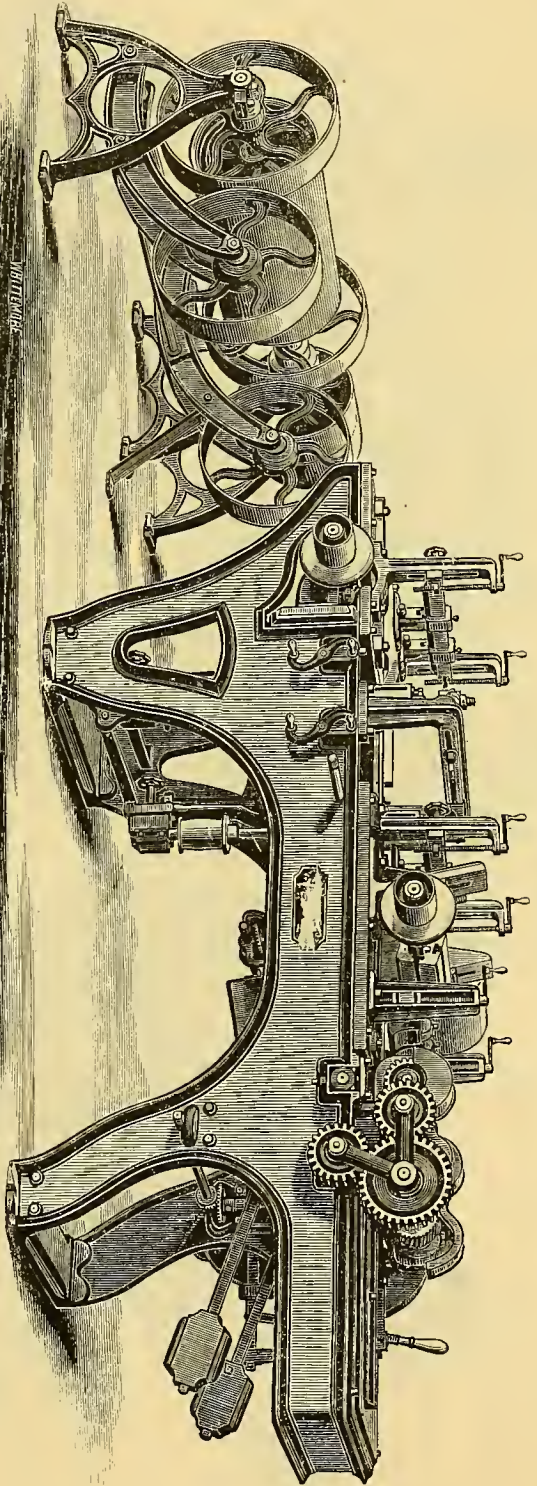
Machine for Setting Matcher Cutters.



This machine, as its name indicates, is made for setting the Cutters in Matcher Heads. It is perfectly adapted to the purpose for which it is designed; quickly adjusted to suit all sizes of cutters; a great labor-saving machine, considering its cost, and parties using Matchers cannot afford to do without it.

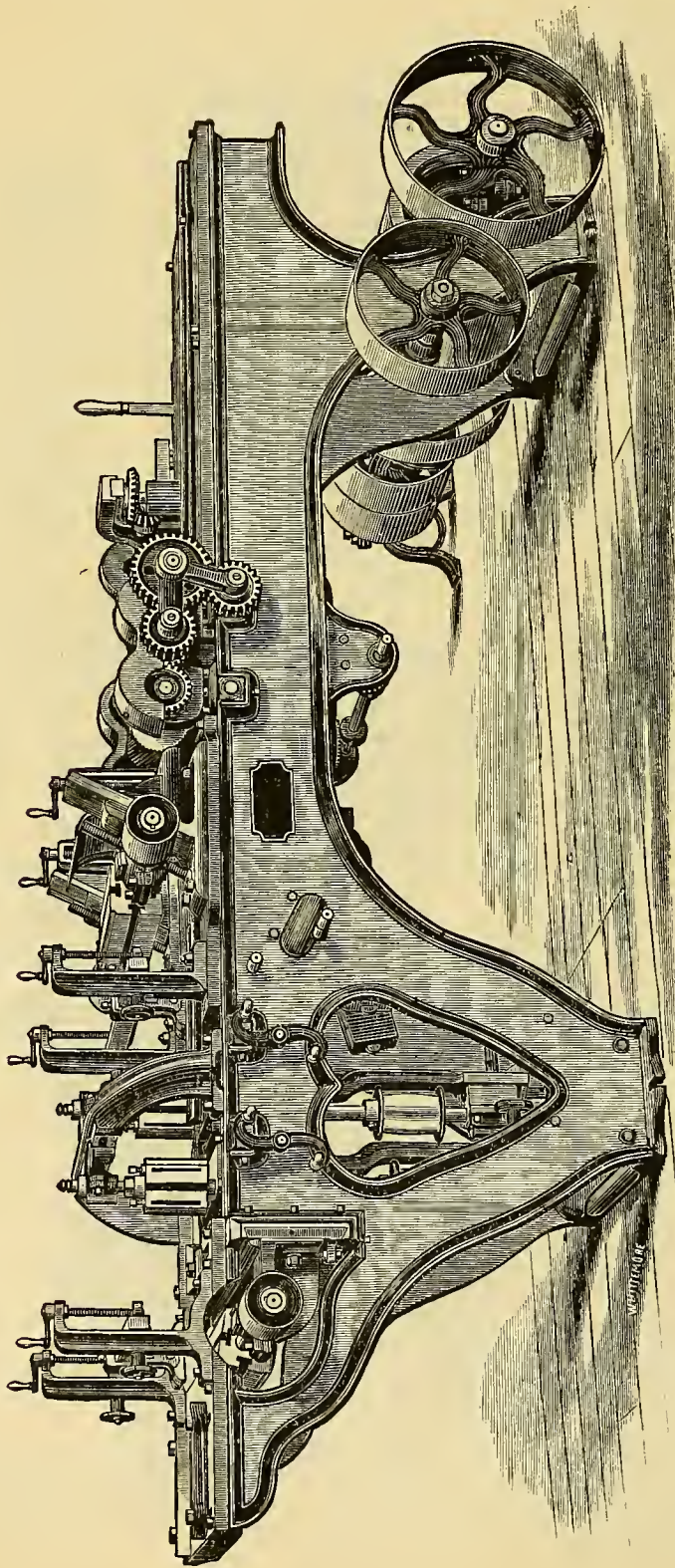
The cut represents the machine with a Matcher Head on it, showing the manner in which the cutters are set.

Lee's Patent Four-Sided Moulding Machine.



This is an extra large, heavy and powerful machine, and recent improvements make it one of the most valuable moulders in the market. It has four-sided wrought iron slotted Cutter Heads, 15 inches long, with $\frac{3}{8}$ bolts and wrought iron caps for holding the cutters. It will plane two sides, tongue, groove and bead 14 inches wide, and is also adapted to the smallest mouldings. The upper and lower Heads are beveled on both ends. The Under Head can be drawn out of the frame to set and sharpen the cutters. The Arbors and Feed Shafts are of cast steel, running in the most approved metal-lined boxes. The Upright Spindles can be moved both vertically and horizontally while in motion. They have an extra bearing above the Cutter Head, of recent invention, which is readily removed when the heads are to be taken off, and which enables the Side Heads to do as perfect work as the others. This machine has the PATENT COMBINATION HEAD. It also has the NEW PATENT FEED ARRANGEMENT, consisting of two sets of Double Feed Rolls, heavily weighted. Both sets of rolls are operated at the same time with screws and gears under the bed, and are fitted up with strong and powerful gearing well protected with covers. There are three Adjustable Feed Rolls on each top shaft, making it an extraordinary strong feeding machine. There is a shoe on the weighted Pressure Bar in front of the Cutter-Head, holding the stuff firmly close to the cutter. The top Cutter-Head is raised with screws and gears under the bed. The device for holding the moulding back of the head consists of two slotted uprights and a bar, with a vise arrangement for holding a piece to conform to the moulding. The bar may be raised out of level in order to carry the moulding up to the guide when necessary, and is held firmly in place with bolts and hand wheels. The same device is used for holding the moulding over the lower Cutter-Head. The guides are all adjusted at once with one screw. The Side-Heads are operated with screws and cranks, as shown on the side of the frame, in the most convenient manner. The tight and loose pulleys are 14 inches in diameter, 6 inch face, and should make 700 revolutions per minute. Weight, 3,000 pounds. Boxing extra.

New and Improved Moulding Machine.

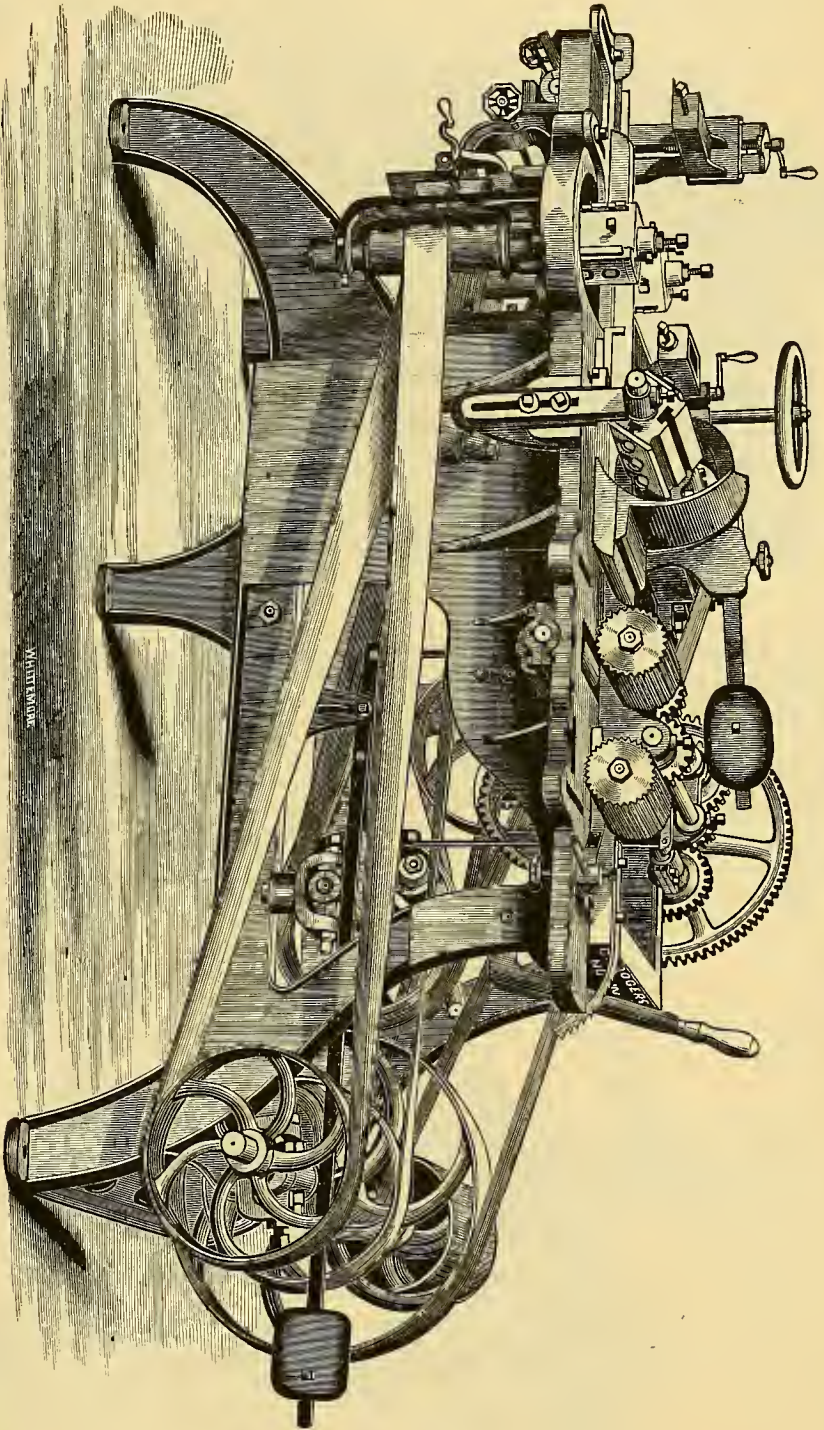


No. 14.

This is a new moulder, just brought out and patented. It is quite different, in many respects, from any other machine, and has all of the modern improvements. The lower Cutter Head is so constructed as to be drawn out of the side of the frame and held in a convenient position for either setting or sharpening the Cutters. It has a parallel Side Feed Roll. It also has a Self-oiling Loose Pulley, warranted to run three months with once oiling. The Drum for driving the Side Heads is so arranged as to run as a Loose Pulley, or as a Tight Drum, by being made in two parts, with a clutch on either end, saving the trouble of taking off the bells when not required for use. The tight and loose pulleys are 12 inches diameter, 6 inch face, and should make 800 revolutions per minute. The Cutter Heads are 12 inches long. Weight, 3,000 pounds.

Wood & Iron Working Machinery.

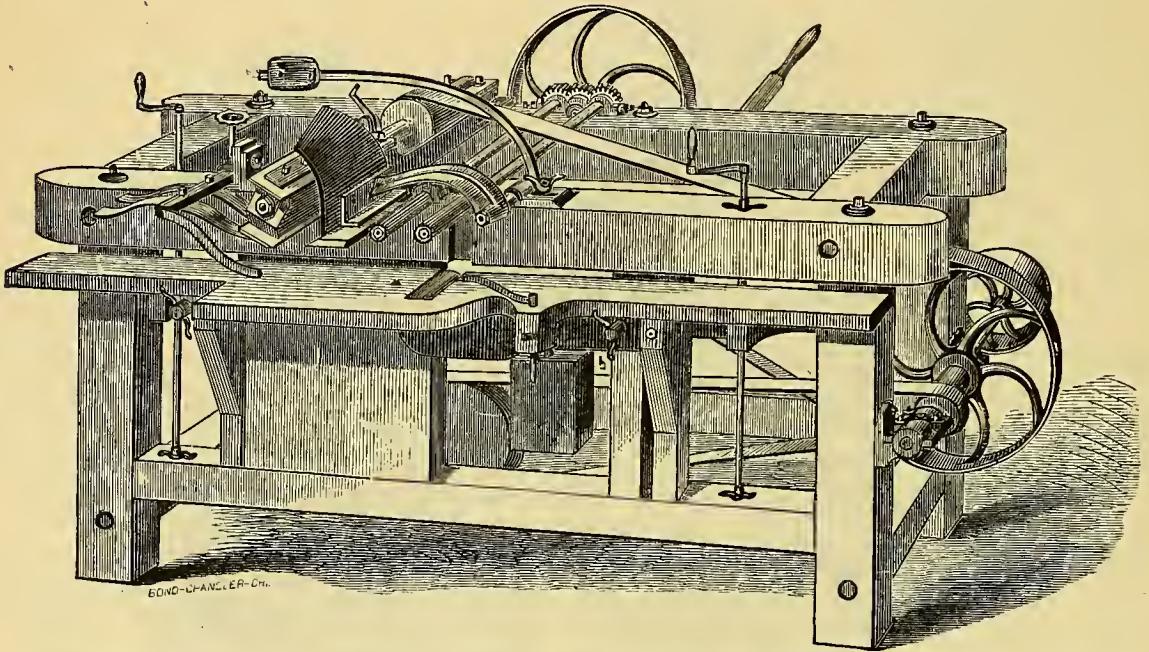
Patent Moulding Machine.



This is a medium size machine, suitable for general work for Carpenters and Builders, and for any mouldings from seven inches down. It will also plane and match narrow flooring and ceiling. The arbors are all steel, and run in self-oiling boxes, and the top arbor has an outside bearing to support the end. The top and bottom Heads are gun metal, slotted on four sides, both seven inches wide, and the Side Heads are iron, with caps, and open seven inches apart. The bed drops 7 inches. The bottom and side arbors are all adjustable, the latter vertically, or on any angle, and move to and from each other. The feed works are weighted, driven by the Friction Feed and Patent Expansion Gearing, and have a friction roll in the bed. The feed has four speeds, from 15 to 50 feet per minute, by a change of pinion gears. It is furnished with all necessary pressure-bars, springs and guides, and every convenience for adjustment. It is built to work three or four sides, as desired. We furnish with each machine the Slotted Heads, top and bottom, and iron Side Heads with caps, and a set of cutters in each. We can furnish, as extras, when wanted, Matcher Heads and Cutters, Moulding Cutters of any pattern, and any of the heads and cutters made for this machine. The tight and loose pulleys on the counter-shaft are ten inches in diameter, five inch face, and should make 1,000 revolutions per minute. Weight of machine, not boxed, 1,500 pounds. Power required to drive moulder, 4 horse-power. All the internal belts for the machine are furnished. The main driving belt should be 4½ inches.

Gear's Illustrated Catalogue of

Wood Frame Sash and Moulding Machine.

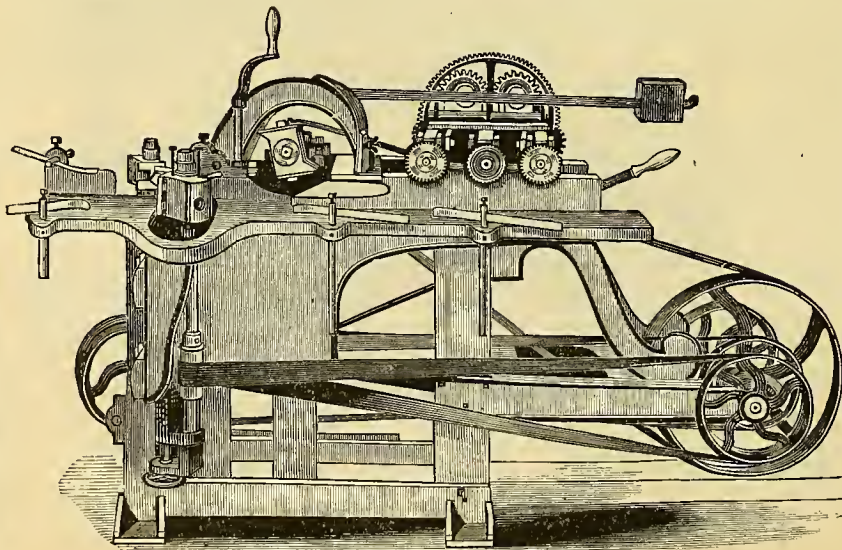


These useful and valuable machines have been so long and favorably known to the public that an extended description is unnecessary. The Frames are made of hard wood, seasoned several years before using, and are finished in a superior manner. The late improvements on it are: The new arrangement of weight and lever to adjust the pressure of the Feed Rolls; the Bonnet Pressure Bar, with shoe close up to the head, to keep stuff firmly down and avoid chattering; the patent Self-oiling Boxes in which the arbors run; the Adjustable Spring Holder, which can be readily adjusted either up or down, or sidewise, in any direction to suit the work.

There is furnished with each machine, unless otherwise ordered, the Planing, Sash and Slat Heads, with cutters in each; and can be furnished as extras, the heads and cutters for doors, panels, mouldings, or any other class of work wanted. There are two sizes of these machines. The large size planes 8 inches wide, and has tight and loose pulleys $8\frac{1}{2}$ inches in diameter, $3\frac{1}{2}$ inch face. Should make 890 revolutions per minute. The small size planes 6 inches wide, and has tight and loose pulleys $6\frac{1}{2}$ inches in diameter, and 3 inch face, which should revolve 900 times per minute. Weight—large size, boxed, 800 pounds. Small size, boxed, 680 pounds.

Improved Sash and Moulding Machine.

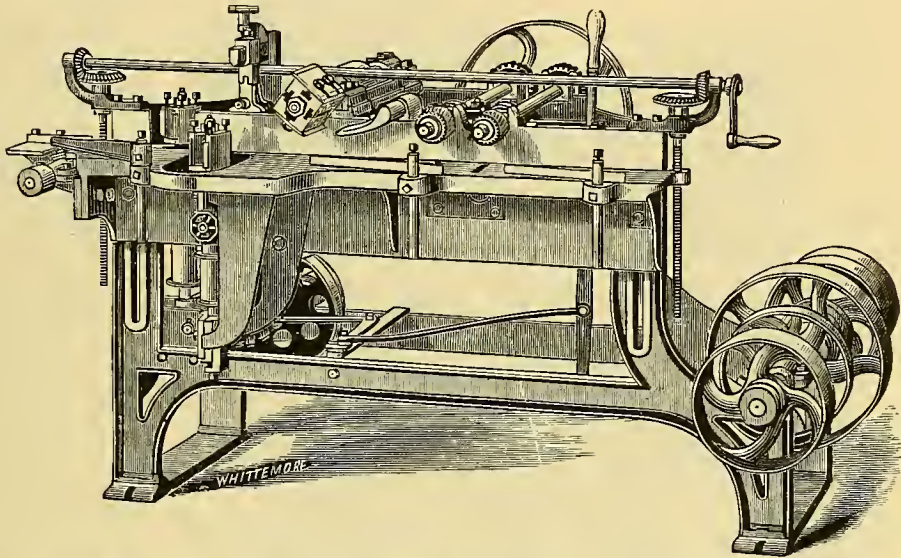
The No. 1 Moulder planes 8 inches wide and sticks the heaviest mouldings. Will also plane and match floor boards 8 inches wide; it works three or four sides. Patented July 6, 1858, and October 24, 1865. It has tight and loose pulleys 10 inches in diameter, 6 inch face, and should make 860 revolutions per minute.



The No. 2 Moulder planes 6 inches wide and will stick mouldings, sash, blind sash, &c.; it will also raise panels, groove door sashes, &c., &c.; it works three or four sides. Patented July 6, 1858. It has tight and loose pulleys 9 inches in diameter, 4 inch face, and should make 875 revolutions per minute.

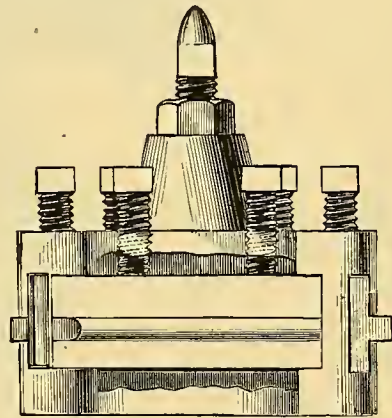
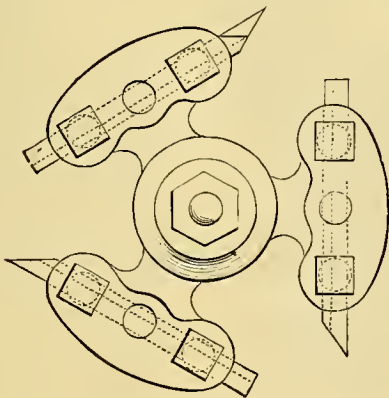
Wood and Iron Working Machinery.

Moulding Machine for Door, Sash and Blind Work.



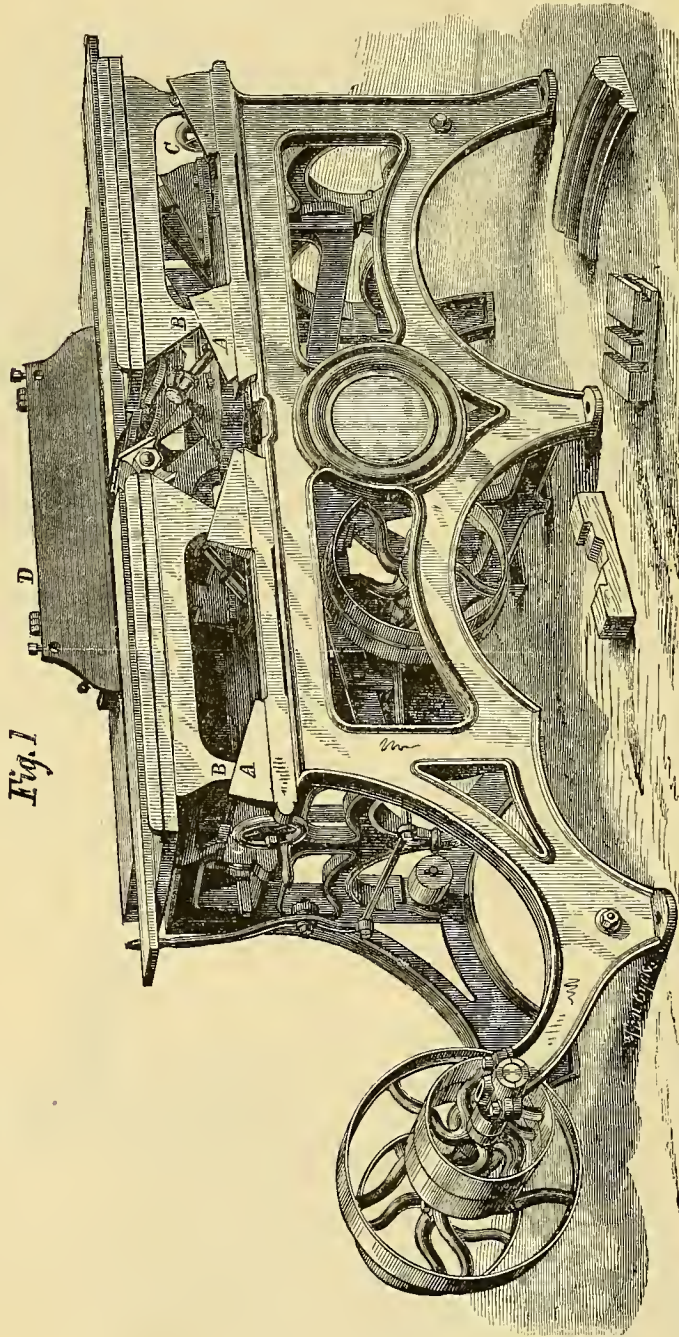
This machine is designed expressly for door, sash and blind work. It has an Under Cutter Head, well adapted for planing blind shades, and has two sets of Feed Rolls, which makes it a very strong feeding machine, enabling the operator to hold his shades more firmly to the bed than can be done with an ordinary blind shade machine. The Bed is raised at both ends with screws, keeping it always level, and is firmly fastened to the frame with bolts working in slots in the frame. It is capable of working door rails 12 inches wide. The tight and loose pulleys are 10 inches in diameter, 4 inch face, and should make 770 revolutions per minute.

Patent Solid Matching Bits.



These bits are recommended by those who have used them as being one of the best arrangements for matching lumber extant. Besides being more convenient to set than the common matching bits, they cut a smooth tongue and groove and do not heat. The instant the cut is made the bit is clear of the stuff.

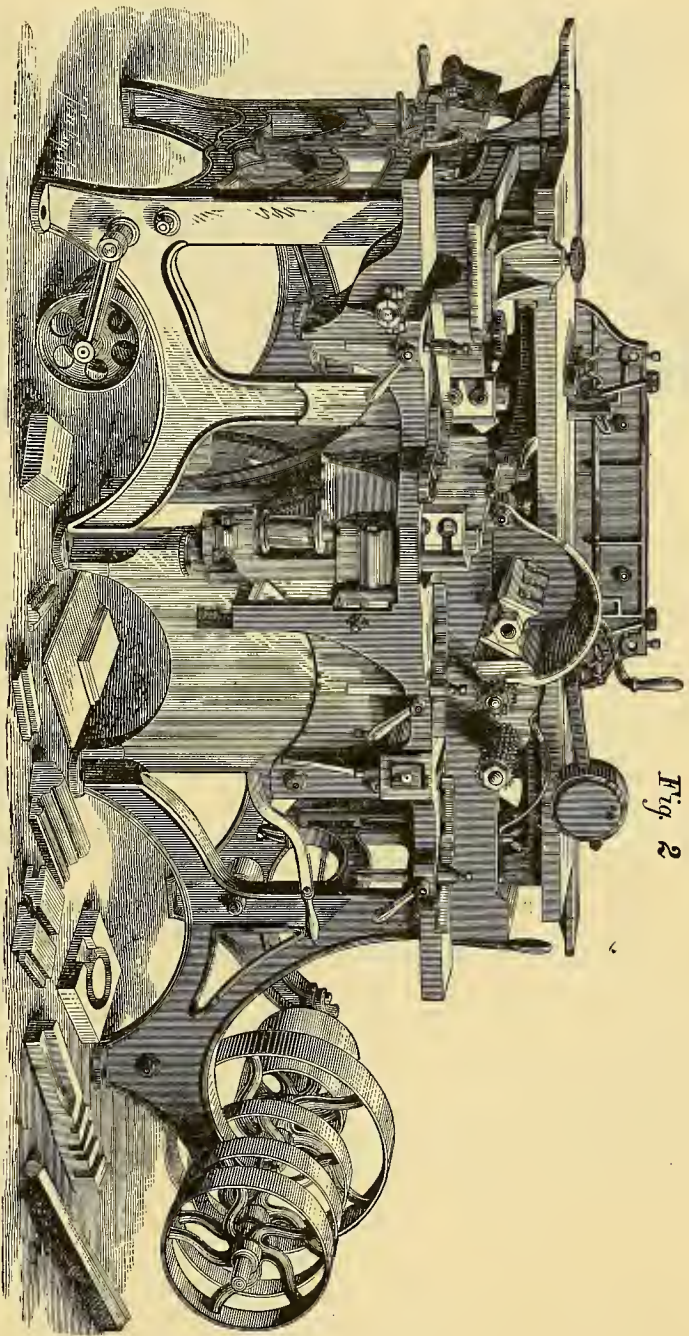
The Universal Wood-Worker.



This cut represents the front view of the above-named machine. It is always ready for the work you want it to perform, and is strong and well built. Its parts do not need to be renewed after a brief use, and are not liable to break or become disarranged. No pains and labor have been spared to make it a first class machine. Its construction is simple and easily understood, and requires very little attention to keep it in working order. One of its greatest recommendations is its simplicity. It is a Planer of eight inches width; a Moulding Machine—sticking any light moulding up to an eight inch crown moulding; a Panel Raiser—raising and finishing one or both sides at the same time, for immediate use, with square, beveled or moulded raise; a Jointer—making a glue, rolling-table and flooring joints; a Gainer—making a round, bevel groove or grain, from three-eighths to eight inches wide; a Rip or Cross-cut Saw—being a substantial saw-table, permitting the use of a rip or cross-cut saw of twelve inches diameter; a Boring Machine—having a sliding table of eighteen inches side and fourteen inches drop; a Routing Table—where bed, table and fence posts can be routed and round-ended mortices made; a Radius Planer (known as Bumble-Bee)—where wagon felloes, hounds, cart and drag shafts, &c., can be planed. It will plane light or heavy stuff of any length, out of wind, and finish it at the same operation, with great perfection.

The Universal Wood-Worker,

Fig. 2



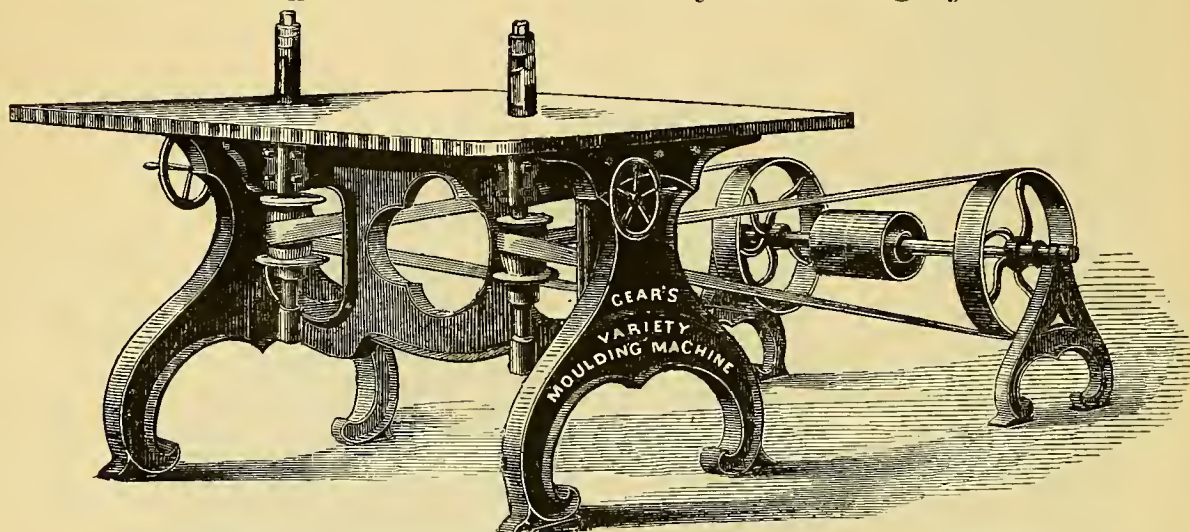
With Sticker Attachment to Plane Four Sides.

The above cut shows the reverse side of the machine represented on the preceding page. Beside the work before mentioned, it will corner, raise and flute the whole length, or between ends, and between the turned parts of bed, table, show-case piano and billiard-table legs, and will plane rough-split or hewed stuff, and tapered sticks, of either hard or soft wood, without "forms" or "wedging up." It is a ready and handy machine for odd jobs, and for planing ends and opening pinths, chamfering posts and rails, jointing staves for columns and tanks; jointing several pieces of light stuff, such as casings and palings, at once, and many other things usually done at the bench, too numerous to mention. It saves much time and labor, as it can be easily adapted to the various kinds of work by simply changing, in almost a moment's time, the heads.

The machine is manufactured with different attachments, viz.: Universal Wood-worker, with Boring and Rounding attachment; Universal Wood-worker, with Sticker attachments, to plane one, two, three or four sides. The machines with Sticker or Moulding attachments to plane three or four sides are made wholly of iron and steel, in the most substantial manner. The frame part of the other machines will be furnished either of part wood and iron, or wholly of iron, at the option of the purchaser.

Gear's Illustrated Catalogue of

Gear's Improved Variety Moulding Machine.



The Original and Only Simple and Perfect Machine Made.

Patented November 8, 1853; extended September 30, 1867. Also, patented April 30, 1867; February 2, July 13, and November 2, 1869, and February 1, 1870.

Twenty years' experience in experimenting and perfecting Nathaniel Gear's Combination Patent Variety Moulding Machine enables us to say that we are now prepared to furnish the manufacturing public with the best machine extant for moulding, planing and cutting straight and irregular forms. It is simple in its construction, practical and safe in its operations. The danger to operators of this class of machines has been entirely obviated by recent great improvements; and the new improvements made of late render this machine one of the wonders of the age. By the simple attachment of our improved Feed Table, represented on page 32, straight mouldings and planing are done upon it; also, circular mouldings; thus combining, in one machine, all the mechanic needs for doing his straight, waved, circular and irregular work, saving the cost of several machines to effect the purposes accomplished by this alone. It is, therefore, used profitably in the smallest establishments, as well as the largest. The operations of this machine do not stop at cutting the edges and sides of timber, but work equally well upon the ends, cutting them into any required form with the same facility that it does the sides.

It has now become one of the standard machines in the market, and any shop without it lacks one of the most useful and profitable tools now used or invented. Its application is at once so universal, its labor-saving capacity so great, and we are so assured by experience, that we can say to every man in the wood-working business, "the machine is one you need and must have, sooner or later."

It is not a machine unknown to the wood-working community. It has been in use twenty years all over the United States, and has taken years to complete it and bring it to its present degree of perfection; and so long as there is competition in business, so long will this machine be sought and used. There are many who are not supplied with this machine, who, if they had one, would save the wages of *from twenty to thirty first-class mechanics* the year round, besides much improving their style of work. The cost of manufacturing and the style of work are very important items, and if the cost can be reduced, and at the same time improve designs, such goods will lead the market and the manufacturers can live.

Take Notice.

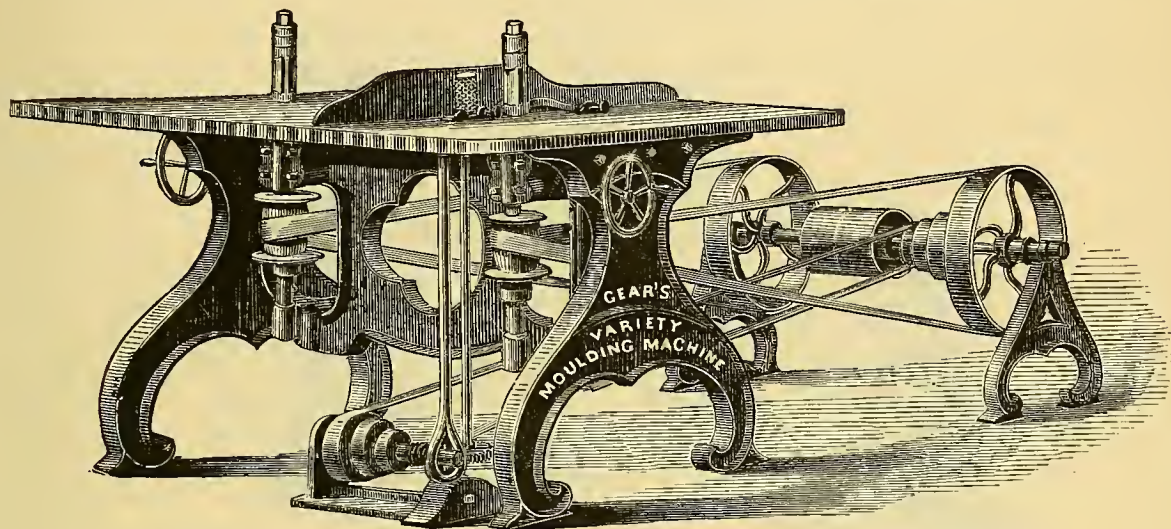
The suit in equity in the United States Circuit Court of Massachusetts, Alonzo S. Gear *et al.*, of Boston, *vs.* Jonathan P. Grosvenor *et al.*, of Lowell, Mass., after a long and thorough investigation, has been decided in favor of myself, and a DECREE FOR A PERPETUAL INJUNCTION, establishing the validity and ownership of the patent, has been accordingly entered. The public are, therefore, cautioned against using infringements on the patents on this machine.

A. S. GEAR,

Sole Owner and Manufacturer for the United States.

Wood & Iron Working Machinery.

Gear's Improved Variety Moulding Machine.



"C" Machine—For Planing and Moulding Irregular and Straight Forms in Wood.

Patented November 8, 1858; extended September 30, 1867. Also, patented April 30, 1867; February 2, July 13, and November 2, 1869, and February 1, 1870.

LETTER "A" MACHINE, WITH $1\frac{3}{8}$ AND 2 INCH HEADS FOR IRREGULAR WORK, WITH COUNTER-SHAFT. This machine is intended for Sash, Door and Blind Shops, Cabinet Furniture Work, and the same work that is done on class "B." It weighs about 650 pounds, has an improved hoisting apparatus and patent steps. The Heads are 25 inches apart. The Table is of wood, made of fifty pieces glued together, and is 3 feet 10 inches in length by 3 feet 9 inches in width. The machine is all iron and steel, except the Table, and will plane up to 5 inches. The tight and loose Pulleys are $7\frac{1}{2}$ inches in diameter, and $4\frac{1}{2}$ inch face, and should make about 775 revolutions per minute. [See cut of machine on preceding page.]

LETTER "B" MACHINE, WITH $1\frac{3}{8}$, $2\frac{1}{4}$ AND $3\frac{1}{2}$ INCH HEADS, FOR ALL KINDS OF IRREGULAR WORK, WITH COUNTER-SHAFT. This machine is made of iron and steel, except the Table, which is wood, made of fifty pieces glued together. Size, 4 feet 9 inches by 4 feet 2 inches. It is intended for every description of irregular moulding and planing. It weighs about 1,000 pounds and has an improved hoisting apparatus and patent steps. It is used in Furniture, Sash, Door and Blind Factories; Chair, Boat, Car, Carriage, Agricultural Implements, and Plough Manufactories; in a word, every kind of an establishment where a machine is desired to plane crooks and sweeps up to 6 inches. It is the best machine beyond doubt in the world for the work designed. The tight and loose Pulleys are 8 inches in diameter, 6 inch face, and should make about 800 turns per minute. [See cut of machine on preceding page.]

LETTER "C" MACHINE, WITH $1\frac{3}{8}$, $2\frac{1}{4}$ AND $3\frac{1}{2}$ INCH HEADS, WITH FEED TABLE AND CONNECTIONS FOR ALL KINDS OF IRREGULAR AND STRAIGHT WORK, WITH COUNTER-SHAFT. This machine is just like the "B," only it has added to it our Feed Table and Attachment for all kinds of straight mouldings up to 5 inches, and can be attached to either the "A" or "B" machine. The tight and loose Pulleys are 8 inches in diameter, 6 inch face, and should make about 800 revolutions per minute. [See above cut.]

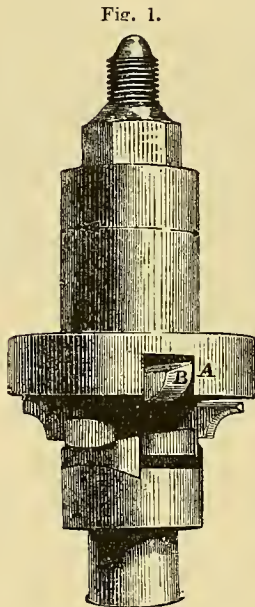
LETTER "D" MACHINE, WITH ONE HEAD (SMALL), WITH COUNTER-SHAFT. This machine is all iron, and similar in construction to our Hand-feed Dovetailing Machine. It has one Head, and is intended for moulding and planing small crooked work, so small that it is not practicable to change the material from one head to the other. It is used to great advantage to do such work where the other sizes of machines are also in use. It has our patent step, and improved hoisting apparatus. Weight, about 300 pounds. The tight and loose Pulleys are $7\frac{1}{2}$ inches in diameter, $4\frac{1}{2}$ inch face, and should make about 775 turns per minute.

OUR NEW DOVETAILING ATTACHMENT can be attached to either the "A," "B" or "C" machine. It makes both mortise and tenon at one operation. In ordering, send a piece of wood just like the shape of the end of the spindle used, and state the number of the machine, if our make.

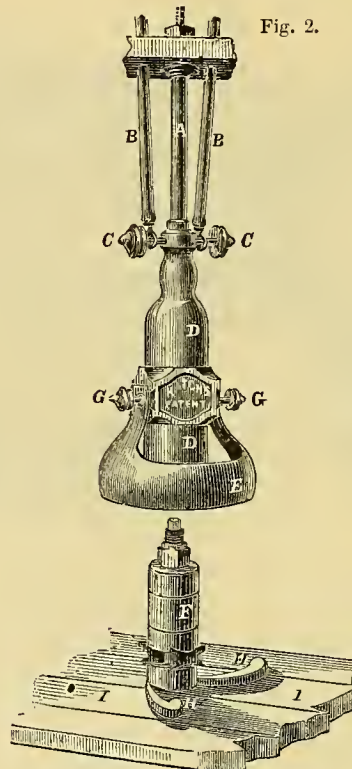
We also make Iron Tables for this machine at an additional cost, if preferred.

Gear's Illustrated Catalogue of

Guards or Guides for Variety Moulding Machines.



Gear's (Jordan's Patent) Adjustable Guard or Guide.



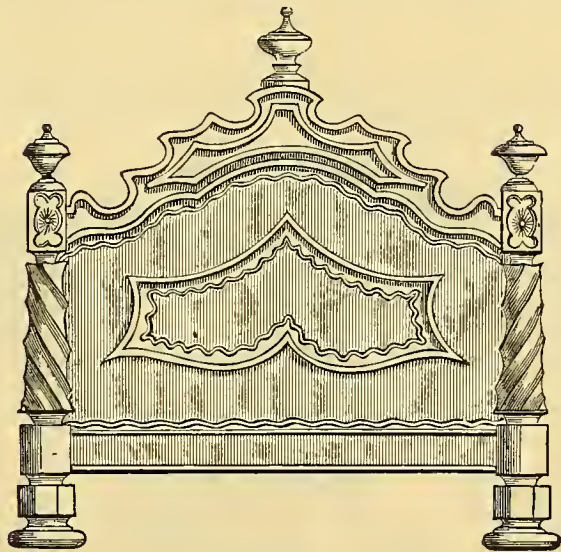
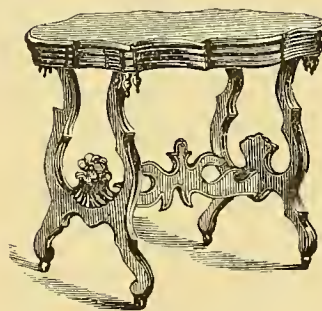
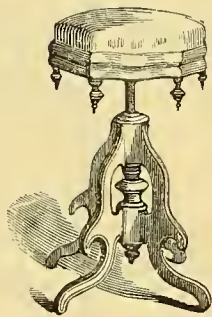
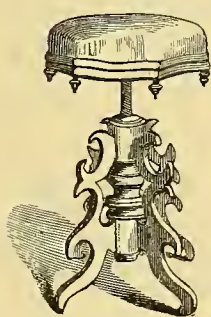
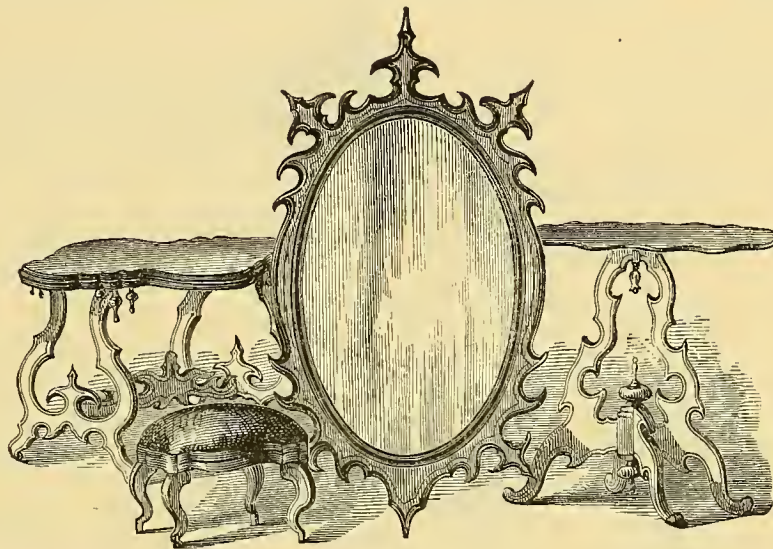
Gear's (Hatch's Patent) Guard or Guide.

Figure 1 represents a view of the Combination Cutter Head, with Adjustable Intermediate Collars, which can be attached to all Irregular Variety Moulding, Planing and Shaping Machines now in use. "A" represents the Cutter Guard Block, which is held between two adjustable collars, and can be moved up or down at the operator's will, and need not be removed in placing or removing the cutters. "B" represents the Cutters projecting out through the Guard, gauging the shavings to any thickness desired, the only complete and practicable way of gauging the shaving the same as in the common planes.

Figure 2 represents a Guard or Guide for use on the Variety Moulding Machine, invented by a practical mechanic. It is a perfect shield to the hands of the operator, and can be attached to any Upright Moulding Machine. I I represents a section of the Table, through which the Cutter Head, F, is seen projecting. H H are guides, the large ends of which are placed in holes in the Table, the other ends resting against the rotary guide collar. The pattern on which the material is fastened to be moulded and shaped, is first put against the guide, H—gradually starting in, cutting the material away upon it—until it rests against the rotating guide. The rod, A, is fastened to a beam, suspended from the floor above, and over the cutter-heads, on which the socket, D D, slides. It is brought down on and over the cutter-heads by loosening the thumb screws, C C, and fastened on the rod again at any point desired. B B are rubber pipes which may be stretched to any distance desired. The hood, E, is fastened to the socket, D D, at G G, and when the socket is pulled down over the head, F, the hood is brought down over the cutters, leaving room enough only underneath it for the thickness of the pattern and material upon it. Therefore, if any undue action of the cutters on the material being planed should draw the hands of the operator to the head, they would be protected by the hood from being injured. The hood can be moved backward and forward on the socket at G G—adjusting it to any length of cutters used, and can be moved around to front any point on the head. They are open on top, so that the operator can see the cutters. The shavings all pass off at the rear of the hood, which is left open for that purpose. By loosening the thumb screws, C C, the elasticity of the rubber pipe, B B, instantly carries up out of the way the hood, E, and socket, D D, leaving the head all clear to change the cutters.

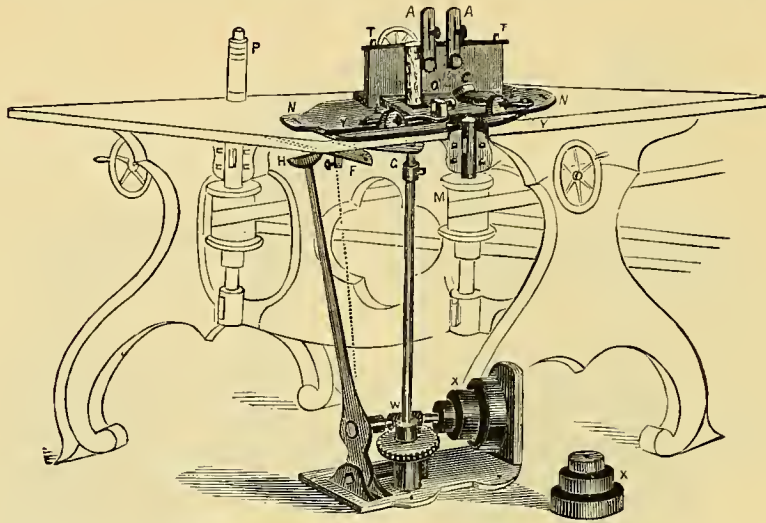
Wood & Iron Working Machinery.

Work Done on Gear's Variety Moulding Machine.



Gear's Illustrated Catalogue of

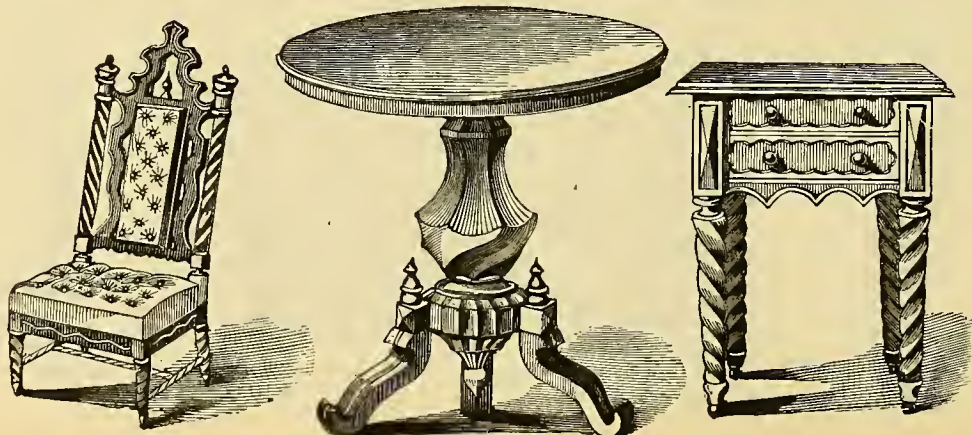
Feed Table Attachment



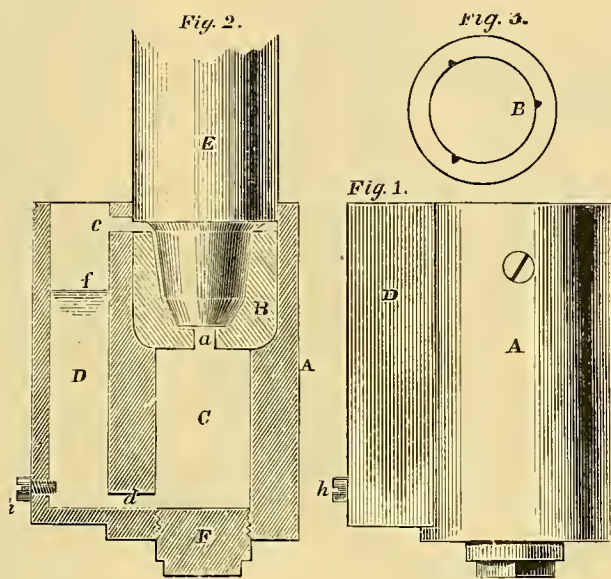
For Gear's Patent Variety Moulding Machine.

The above cut represents an attachment for making Straight Mouldings on our Variety Machine. By referring to the cut will be seen the Table or Bed-piece, N N, which is secured to the table of the machine with two strong screws, tightened by a hand-nut. O O is a sliding rest, which can be moved back and forth. Y Y are springs attached to a sliding rest, which can be adjusted to any thickness of stock up to five inches, and is moved by a small hand-wheel, half of which is shown in the cut behind the rest. A A are guides attached to springs, T T, for keeping the work down on the table, N N. They are adjustable up and down, held in place by thumb-screws, and have rolls in the lower end, which make the work run through without friction. Y Y are two slides planed into the table, N N, V-shaped, to which are attached springs, O and C. The spring O presses on the work between the Cutter Head and the feed-roll; spring C holds the work after it has passed the cutter. These two springs (O and C) are adjusted by two screws in slides T T, so as to give any pressure desired on the work. X X are two cone pulleys. One of them goes on the counter-shaft, and is belted direct to the attachment which gives power to the feed-shaft, G. W is a worm that works in the gear on the shaft G. H is a lever held in place by the spring F, and moves back and forth, as shown by a dotted line, and throws the worm, W, in and out of the gear on the shaft G, to enable the workman to stop and start the feed at pleasure. M is the cutter-shaft with a head the same as shaft P.

Work Done on Gear's Variety Moulding Machine.



Dunklee's Self-Oiling Step for Vertical Spindles.



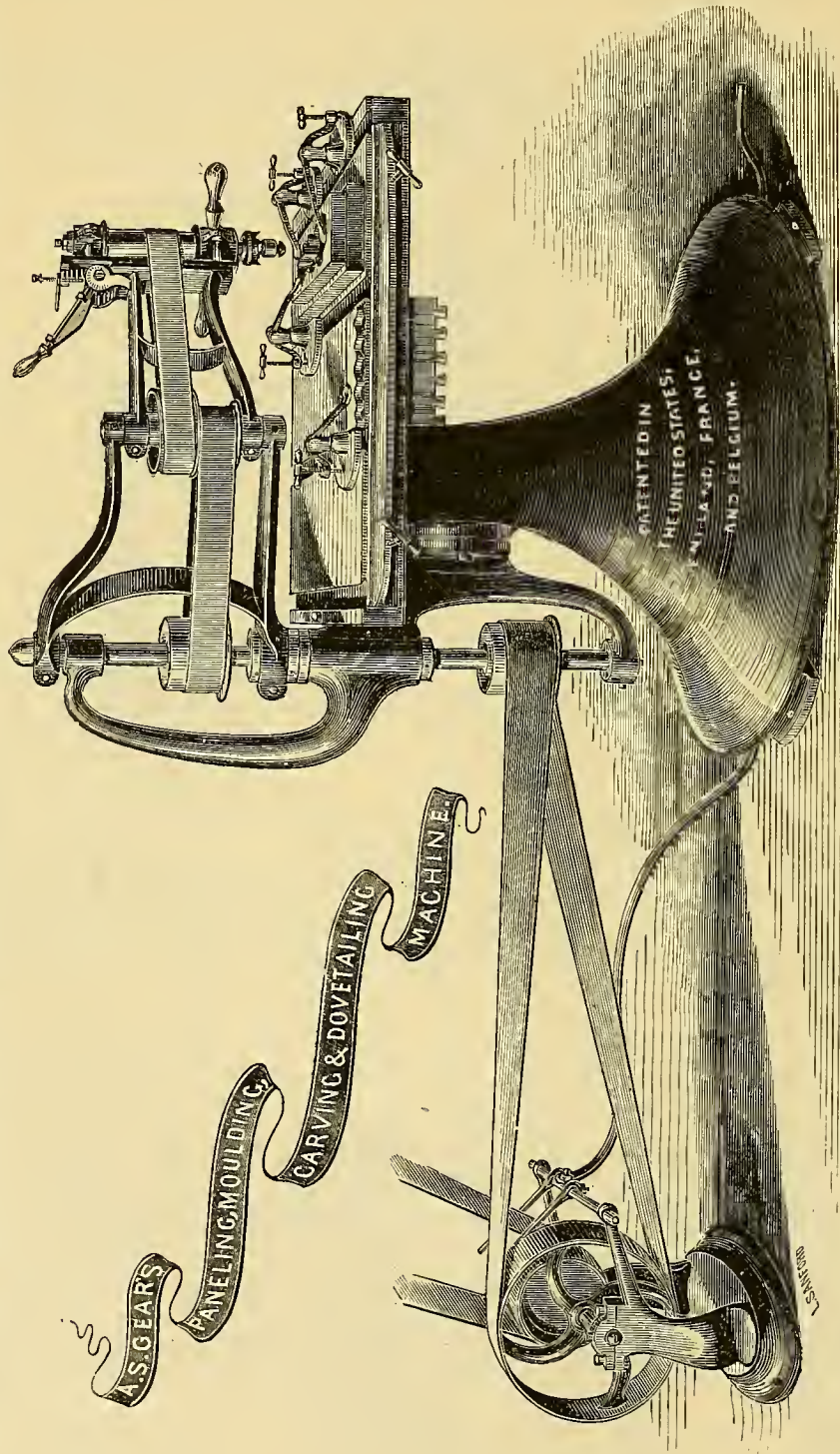
Upright spindles, rotating rapidly, have always been very difficult to make, and the cause of more annoyance to persons using them than almost any other piece of mechanism in use. Many methods have been adopted to keep them properly oiled to prevent them from heating; and no one has been more sorely tried than ourselves to get a self-oiling step for the spindles to our Variety Moulding Machine. We used every thing proposed, but found nothing that was a complete success until we tried the invention above illustrated. The illustration itself is sufficient, at a glance, to show how simple a method can accomplish an object which years of thought have but recently culminated into a fixed fact.

The following description fully explains this Step, WHICH IS NOW ATTACHED TO ALL OUR VARIETY MOULDING MACHINES, AND TO EVERY UPRIGHT SPINDLE IN ANY WAY USED ABOUT OUR MACHINERY, WHICH ALONE PLACES ITS VALUE FAR ABOVE ANY IN USE. Figure 1 is a side view. Figure 2 a vertical central section. A is a socket arranged to receive and hold the step, B, so as to form a chamber, C, beneath the step, and an opening, *a*, is formed through the step into the chamber, C, beneath. Upon the side of the socket, A, is arranged a vertical chamber, D, extending up above the top of the step and communicating with the chamber, C, through an opening, *d*, and also with the step over its top through an opening, *e*. E is a spindle resting in the step. The lubricating material is poured into the chamber, D, until it is filled to the line, *f*. The spindle rapidly revolving creates a centrifugal force within the step, which draws the oil through the opening, *a*, from the chamber beneath, and causes it to move up and flow over the top of the step, through an opening, *e*, back into the chamber, D. One or more slight vertical grooves in the step, as seen in Figure 3, insures a free passage through the step. By removing the plug, F, and the screw or plug, *h*, any sediment which may have found its way into the chambers is easily removed.

A. S. GEAR is the sole owner of the above Patent Step, and all persons are cautioned not to infringe upon the patent.

Gear's Illustrated Catalogue of

A. S. Gear's New Patent Paneling, Moulding, Dovetailing, Carving and Boring Machine.



Patented November 2, 1869; November 23, 1869; December 15, 1869; December 24, 1869; February 1, 1870; May 31, 1870; June 7, 1870, and August 23, 1870. Also, patented in England, France and Belgium.

Wood and Iron Working Machinery.

Gear's New Machine For Paneling, Moulding, Dovetailing, &c.

[SEE ILLUSTRATION ON PAGE 34.]

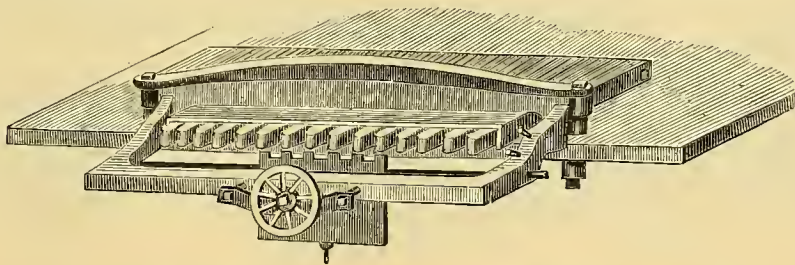
GEAR'S VARIETY MOULDING MACHINE, with which all manner of crooks and sweeps have been planed and moulded on the edges of lumber—completely revolutionizing the manufacture and style of furniture, house-carpentry finish, car building, carriage manufacturing, etc.—now fills the most important place in almost every establishment working wood by machinery. Twenty years have passed since its invention and introduction, and twenty year's experience in its manufacture have suggested many new ideas that we believed could be practically applied to wood-working machinery, and which have at last culminated in producing the wonderful PANELING, MOULDING, CARVING AND DOVETAILED MACHINE, with which a panel of any desired form is made, and any irregular or straight pattern desired is planed, moulded or carved upon the edge or face of lumber.

The face of drawer fronts, head and foot boards, center table legs, what-nots, sofa backs, fronts and ends, bureau tops, looking glass and picture frames, secretaries, sewing machine cases, musical instrument cases, brackets, monograms, block letters, persons' names, door panels, office desks, car and steamboat finish, and in fact every kind of finish hertofore made upon the edges of lumber which was formerly required to be mitred and glued upon the face to produce a finish, is now planed, beaded and moulded upon the solid piece itself, thereby obviating the thousands of glue-joints, which, by shrinkage or other causes, render almost worthless a large proportion of our best finished work.

It is also a mortising, tenoning and boring machine; will carve images, scrolls, vines, piano legs—anything, almost, that can be desired in the ornamentation of wood. By the use of emery wheels we take out of wind iron castings and surface iron plates with great rapidity. The machine is easily operated. The operator can move the head up and down and fasten it at any point without moving his hands from the handles, and a very large proportion of work desired can be accomplished without using either a guide or pattern—simply using a drawing of what you desire to carve or mould. The inventor has cut and moulded his own signature upon the face of lumber, without the aid of a guide or pattern, with nearly the same ease that it could be done with a pen. The machine also dovetails, and unlike any other before produced, cuts rapidly both pieces at once—the mortise and tenon—at the same operation, making the strongest dovetail possible.

This machine does a kind of work that has heretofore required the most skillful mechanics to perform. There is hardly any branch of wood-working where it cannot be profitably used. It is capable of doing the work that THIRTY FIRST-CLASS MECHANICS could perform by hand. It is simple in construction, not liable to get out of order, perfect and exact in its operations, and is in every way the most valuable and wonderful wood-working machine of the age. Several large furniture establishments and railroad shops have it in use. Among other commendatory notices received is the following from George W. Perry, Master Mechanic of the Philadelphia, Wilmington and Baltimore Railroad Company, Wilmington, Del.: "This company has one of your Paneling, Dovetailing, Carving and Boring Machines, and it is with pleasure that I inform you that it gives complete satisfaction, performing the work in No. 1 order and with great dispatch."

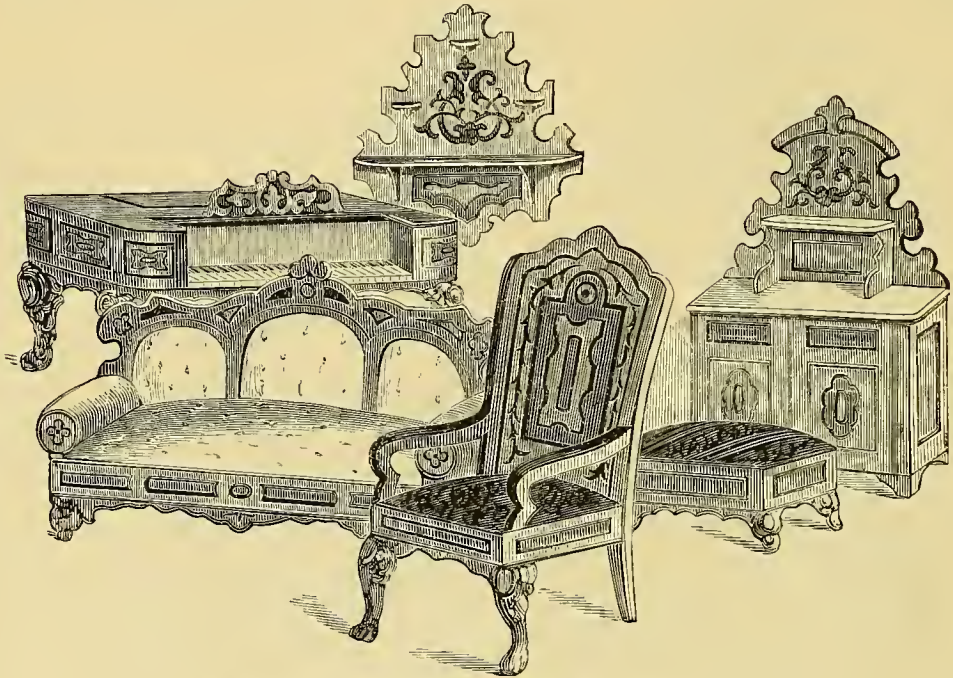
The New Dovetailing Attachment to Gear's Paneling Machine.



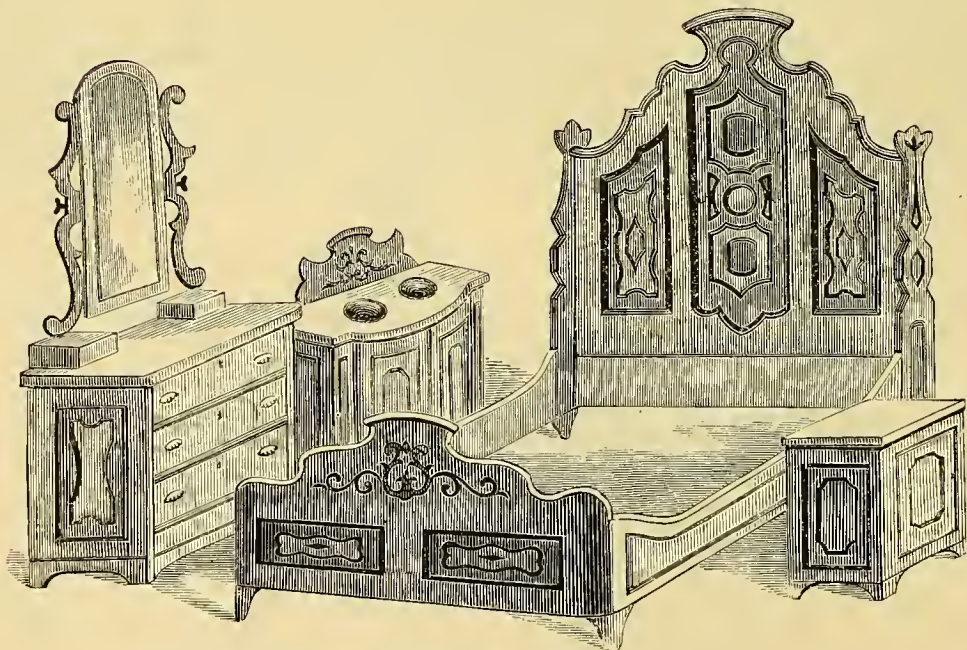
It makes both tenon and mortise at one operation.

Gear's Illustrated Catalogue of

Work Done on Gear's Paneling Machine.



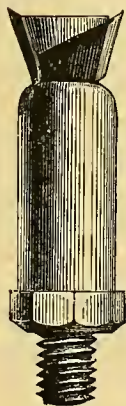
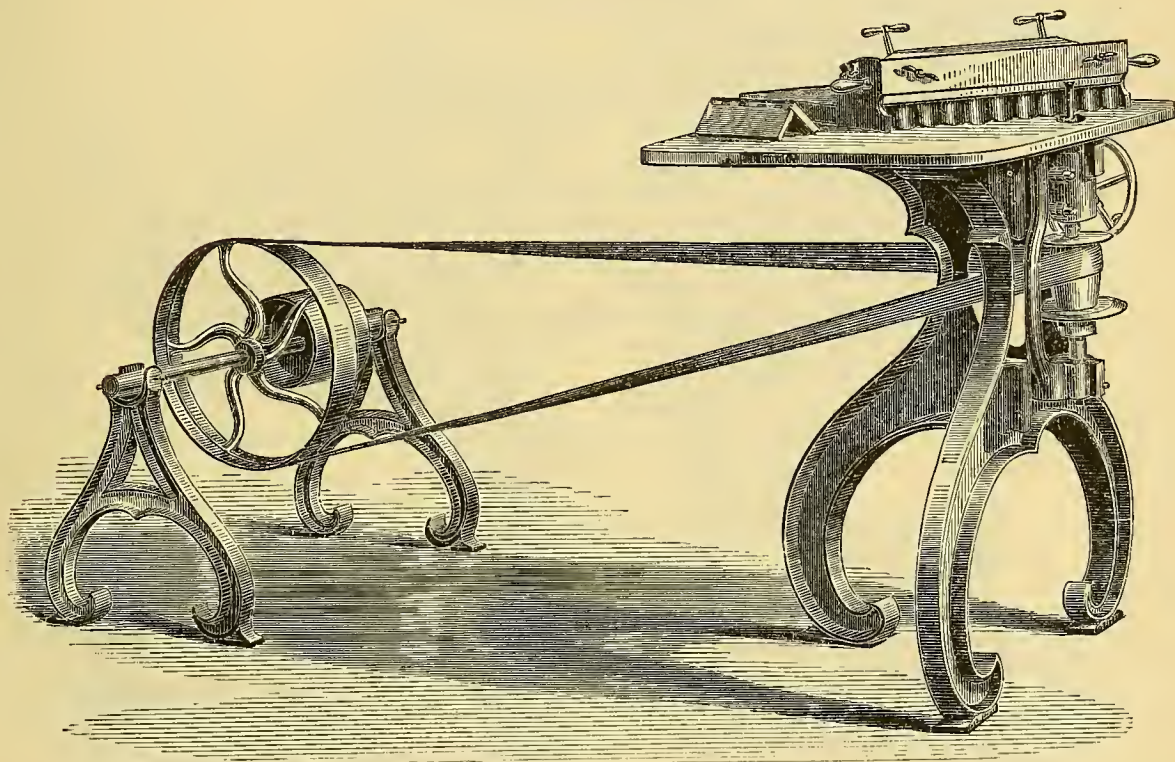
Piano and Parlor Set of Furniture.



Set of Chamber Furniture.

Wood & Iron Working Machinery.

Gear's Patent Dovetailing Machine.



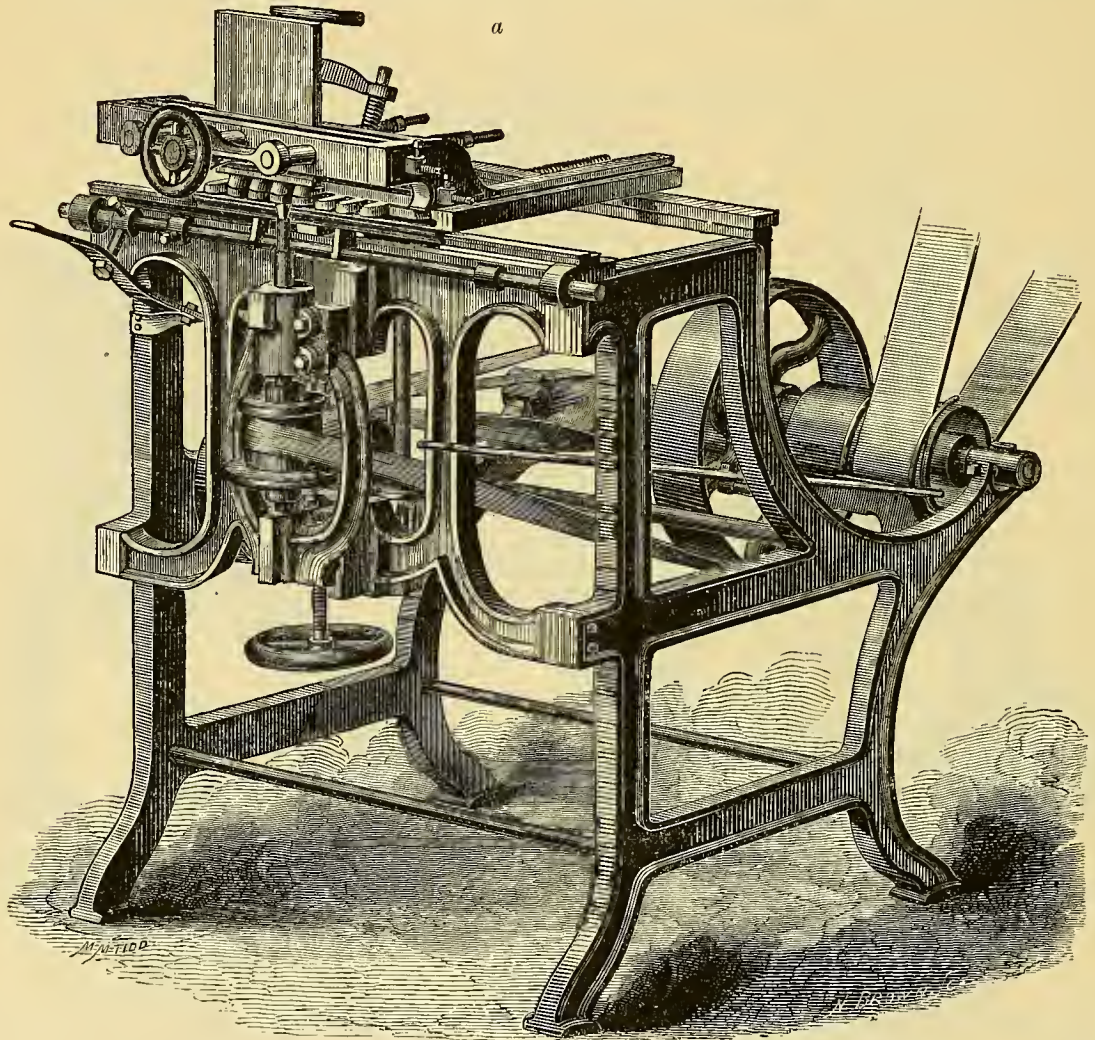
CUTTER-HEAD.

This machine makes both mortise and tenon at the same time. The same tool that cuts the mortise also cuts the tenon. The work is held in place the same as in our Automatic Dovetailing Machine. The template holding the work is moved around the cutter by hand. The table being of iron, and finished smooth and true, makes it work easy. One man can work from fifty to sixty common drawers per hour on this machine. The two pieces of work to be dovetailed are fastened together in a simple manner. It will do perfect work, and will cut more rapidly than any other machine known. The Cutter Head, and manner of holding the Cutters, is exceedingly simple. The knives are of good width—are adjustable, and can be moved forward as they wear away, and their strength is not impaired with slots and holes. It makes the old style shape dovetail; also, a style peculiar to itself, which is thought to be the best produced.

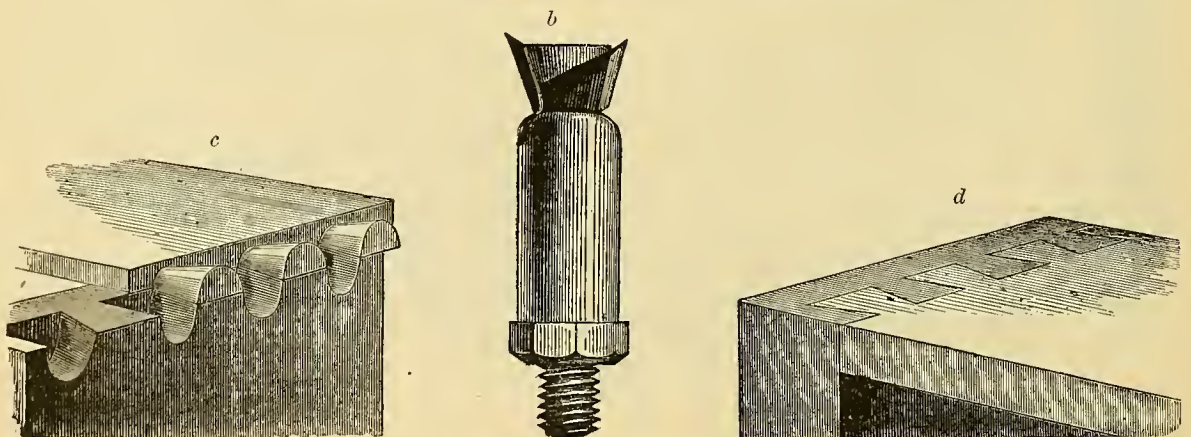
It has besides an attachment for the Variety or Upright Moulding Machines. In ordering the attachment, please give the name of the maker of the machine, the exact diameter of the spindle or arbor used, and the length from top of table to bottom of step, and the exact shape of that part of the spindle which fits the step. If to be used on our Variety Machine, state the class and number of the machine.

Wood and Iron Working Machinery.

Gear's Automatic Dovetailing Machine.



Patented April 2, 1872.



For description, see next page.

Gear's Illustrated Catalogue of

Gear's Automatic Dovetailing Machine.

Making the Tenon and Mortise at One Operation.

By reference to the cut on page 38 (*a*), will be seen a vertical spindle, in which is seen also the Dovetail Head (*b*), so arranged as to be hoisted up or down in order to adjust the same to any height. On the frame back of it are two Sliding Tables, which are simultaneously moved by a simple mechanism, feeding the pieces to be dovetailed (which are held on one of them) by the cutter head, forming one into a tenon, and the other into a mortise, simultaneously. The other parts of the machine need no further description than to say that the belts from the large pulley on the counter-shaft give power to the shaft containing the cutter head, and the pulleys seen underneath the machine are driven by a belt from the counter-shaft, which gives motion to the sliding tables and feeds the work being cut back and forth past the revolving cutter-head. The reference, *c*, shows the manner in which the pieces come together while being cut, and the reference, *d*, shows the appearance when put together.

This simple, complete, automatic and reliable invention is now offered to the manufacturers of this country. Besides doing its work in a better manner, it does it more rapidly, and any boy can operate it, there being nothing about it to get out of order.

The country is flooded with a large number of machines, called Dovetailing Machines, that do not make a dovetail. Machines that make a joint by boring a hole in one piece and forming a pin on the other, we call *Doweling Machines*. Such pieces are doweled, and not dovetailed together. It is true, some of these pins are formed leaving a shoulder, but the durability of the pieces so joined together is in the strength of the pin only. This machine makes a *dovetail*, the tenons of which bear on every part of the mortise, and the dovetail formed by it is dovetailing two ways, the tenon being cut at the same time that the mortise is, always making a perfect fit. Wood put together by this machine is more firm than by any other heretofore known, and is nearly as cheaply done as it can be nailed. So perfect and reliable is this machine that the manufacturers of it freely offer and earnestly urge all in want of a Dovetailing Machine, to favor them with their address and signify their desire to try it, and one will be sent for trial, which may be returned if not satisfactory.

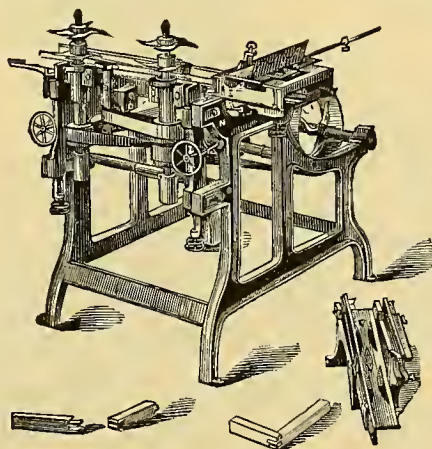
Do not longer work with a machine that only aids in accomplishing a desired purpose, and the work of which, at the most, is but doweling pieces of wood together; and do not keep machines in use that require too much time in adjusting them, but purchase at once one that is automatic in all its workings, every part of which is simplicity itself. The manner of holding the cutters in the cutter head used (see letter *b*), the short length of time required to take them out, sharpen and replace, alone makes it profitable to discard the old style machines and fill their places with this economical invention. Altogether, we say truthfully, as a little time will demonstrate, this machine you cannot dispense with, if you would reduce your pay-roll and the cost of making dovetailed work.

The tight and loose pulleys on the counter-shaft are 7 inches in diameter, 4 inch face, and should run about 800 revolutions per minute. We will send one on trial to all who are in want of a *Dovetailing Machine*.

Do not confound Gear's Automatic Dovetailing Machine with Gear's Paneling and Dovetailing Machine, which is altogether a different article.

Patent Sash Dovetailing Machine.

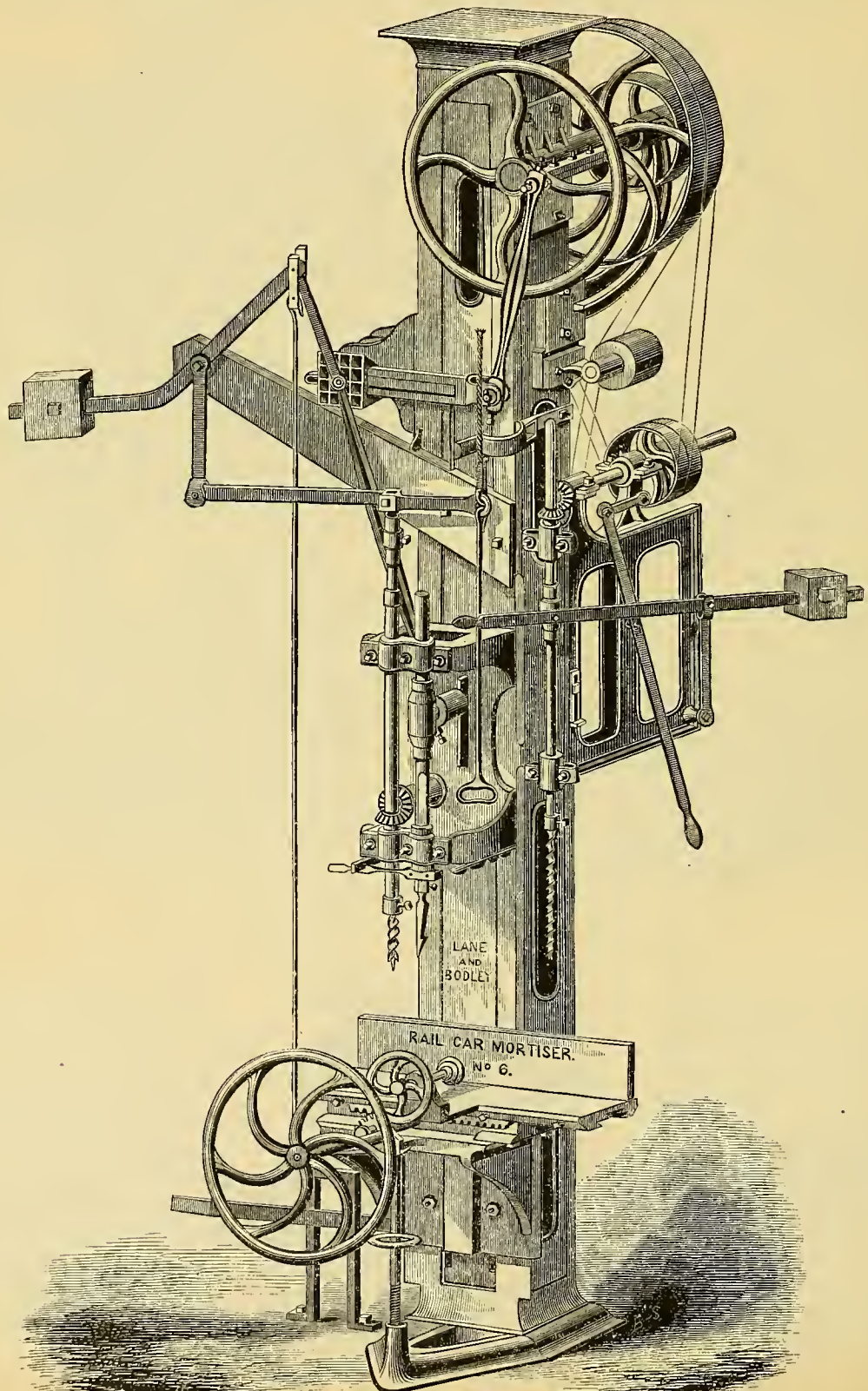
The accompanying cut is a representation of the machine as designed for the especial purpose of forming the dovetail joints universally used on the stiles and meeting rails of sashes. It combines all the elements of simplicity, occupies but little space, and only requires the power of an ordinary saw. The machine is so arranged that but a few minutes is required to adjust it, so as to cut with positive accuracy the various sizes and forms of dovetails or straight tenons ever used on sashes and



blinds. After once adjusted to the desired form, the operation is so simple that the most inexperienced person can work it. All that is required is to place the stuff (as shown in the cut) on the table, and then push it forward until it has passed the second saw or cutter, and the work is done, making a more perfect joint than can be made by hand, with a saving of much time in the handling of the stuff, as each joint (male and female) is produced at a single operation.

Gear's Illustrated Catalogue of

Large Car Mortising Machine.



Wood & Iron Working Machinery.

Large Car Mortising Machine,

With Auxiliary Boring Apparatus for Car Work.

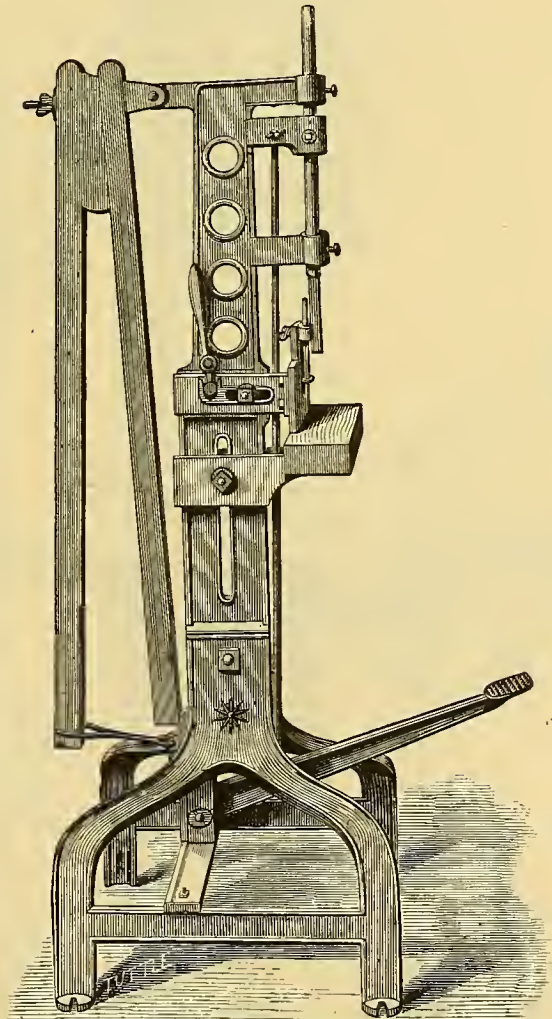
[FOR ILLUSTRATION SEE PAGE 40.]

This machine is of the heaviest and most substantial description. It is built upon a column of cast iron, the mandrels carrying the auger and the chisel-stand seven inches from the face thereof. The carriage will receive timber sixteen inches wide and has a suitable vertical adjustment. Chisels of any needed width may be used; a three inch mortise in hard oak produces no concussion to the foot of the operator, and no injury to the machine. The stroke is four inches, but may be increased to seven inches or less without extra cost, if so stated in the order.

The Auxiliary Boring Apparatus, by means of levers easily handled, has a horizontal adjustment of sixteen inches and a vertical motion of the same amount, using augers of that length; with it all holes needed for bolts or other purposes may be bored whilst the timber is in hand for mortising.

Augers and chisels $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$ inch; Augers for Auxiliary Boring Apparatus, 16 inch twist, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{7}{8}$ inch. Tight and loose pulleys 12 inches in diameter, $4\frac{1}{2}$ inch face. Speed, 225 per minute.

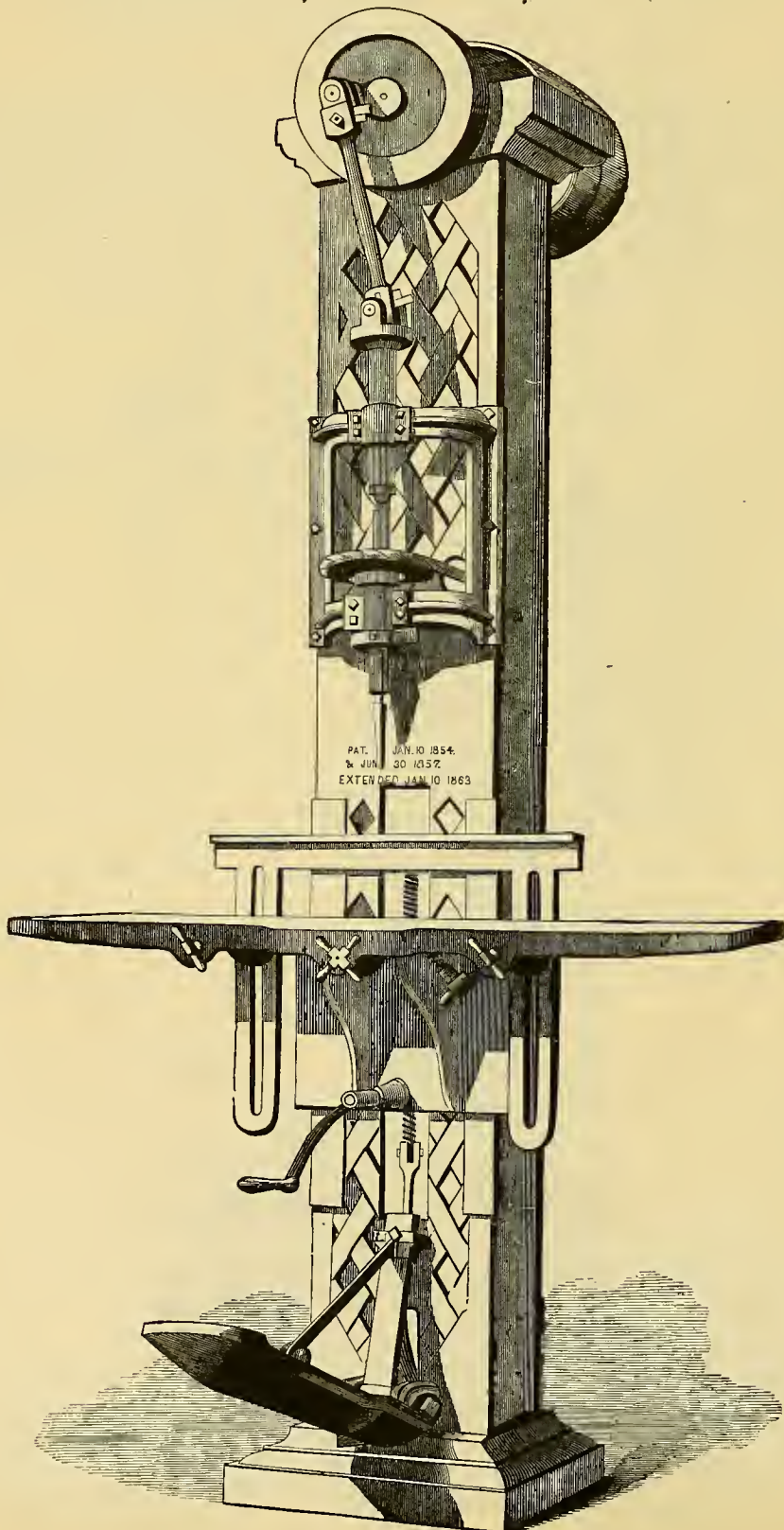
Foot Mortising Machine.



This machine is adapted to the manufacture of doors, sash, blinds, and all light work. Parties not having power will find it a convenient and labor-saving machine for all kinds of job work. It is made of iron and steel, excepting the spring, which is made of the best of seasoned hard wood. The chisel is reversible.

Gear's Illustrated Catalogue of

Power Mortiser No. 2.



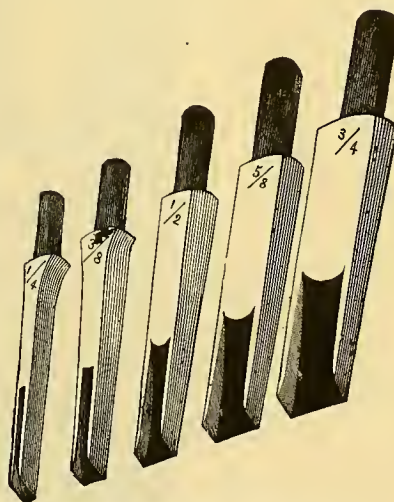
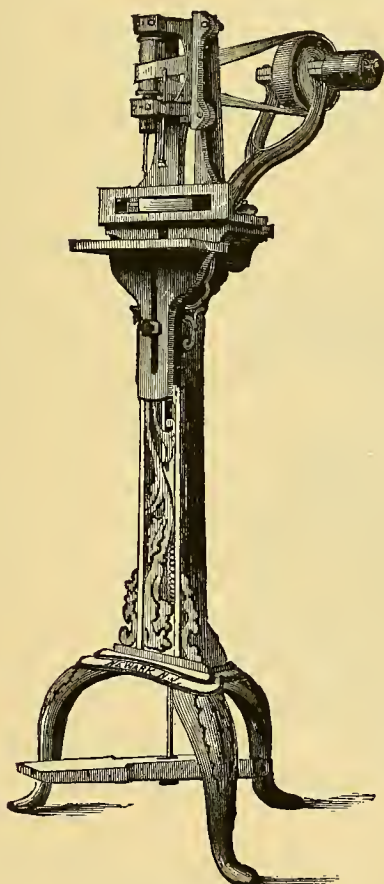
Wood and Iron Working Machinery.

Power Mortiser No. 2.

[SEE ILLUSTRATION ON PAGE 42.]

This is a compact and strong machine, being built entirely of iron and steel. It takes up but little room, and is simple and durable, giving perfect satisfaction wherever used. It runs without noise, and there is no jar on the foot. The chisel is reversed by power applied by friction, and the device for accomplishing it is very simple, and operates instantaneously, the chisel always taking care of itself, with no loss of time to the operator, and with no possibility of breaking the machine. It can be run any desired speed with perfect safety. The size represented by the engraving on the preceding page is No. 2, and is intended principally for the use of door manufacturers. It is capable of mortising any size of stile or rail ever required, and is also sufficiently heavy, strong and suitable for mortising hard wood, such as bedsteads, etc. It weighs about 850 pounds, and should be run about 400 strokes per minute.

There is another size,—the No. 3,—intended for mortising sash and blind stiles, or any light work, and, therefore, taking the place of all foot machines, doing the work nicer and at least three times as fast, with much less labor to the operator. It weighs about 350 pounds, and should run about 500 strokes per minute.



Chisels for Power Mortiser, No. 2.

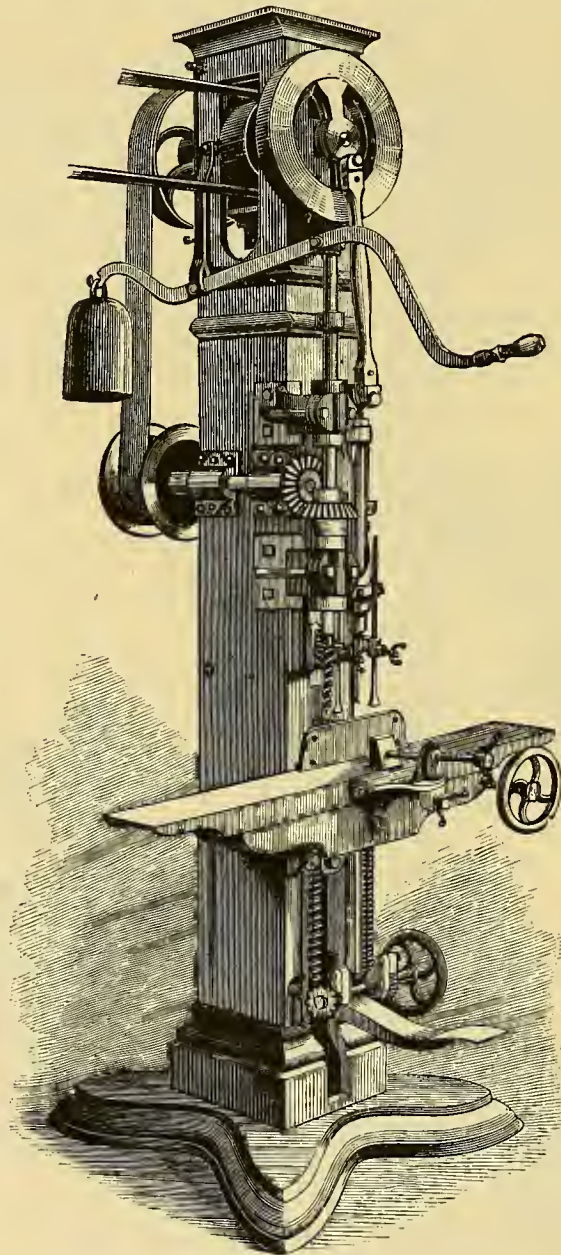
Blind Stile Spacing and Boring Machine.

SELF-SPACING AND SELF-FEEDING.

By the use of the above machine the labor of laying out the holes is entirely dispensed with, being provided with a pawl and ratchet, and so arranged that the same ratchet (or notched stick) used in the Blind Wiring Machine can also be used in boring the stiles, thereby producing a perfect interchange and making it an indispensable companion to the Blind Wirer.

Gear's Illustrated Catalogue of

Medium Power Mortising Machine,

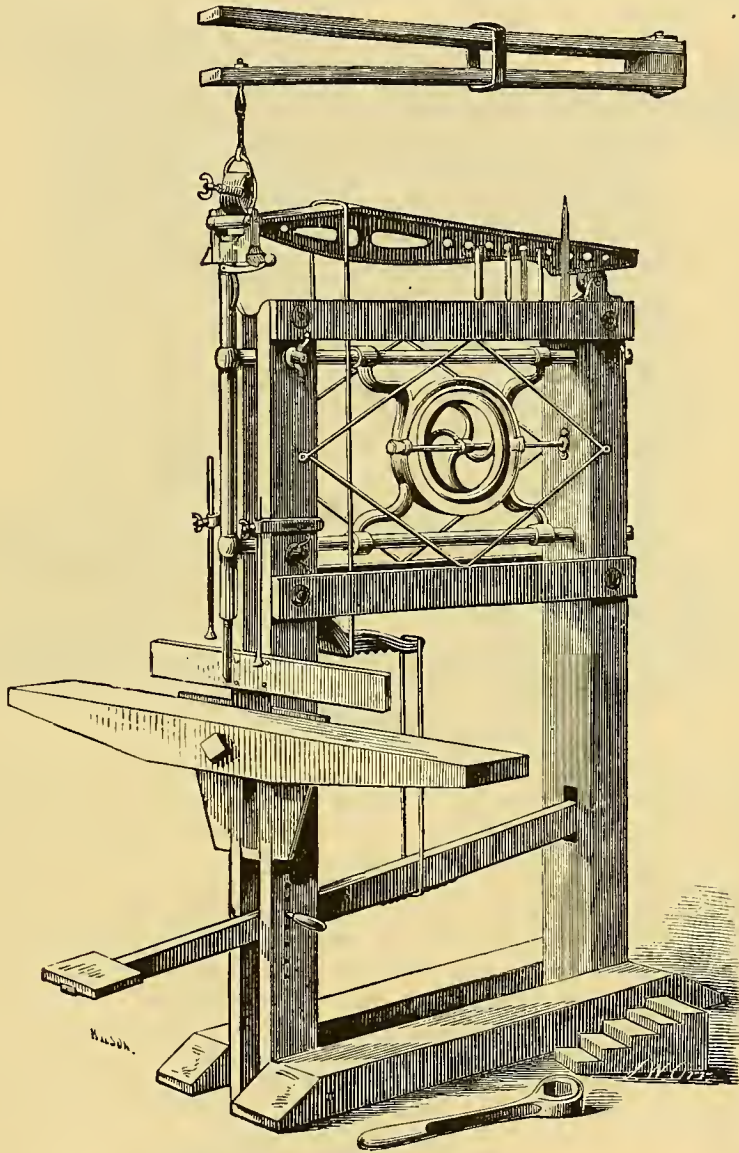


With Boring Apparatus.

This machine is especially adapted for ordinary work in hard wood and the heavier classes of building work, &c. The chisel has a rapid perpendicular motion, and is brought down to the work by the treadle, and carried up by the balance-weight on the back end of treadle. It is self-reversing, turning the chisel when the treadle is let up, at each end of the mortise. The bed can be set at any angle required. The machine has the Boring Apparatus, which is set on the same line with the chisel, so that the work can be bored and then run under the chisel and mortised without unclamping it from the bed. The bit-shaft is run by a belt from the chisel-shaft, and so arranged that when the chisel is working, the bit stops, and as the chisel is let up by the treadle, the bit starts, ready for boring. We furnish with each machine, five chisels and five bits to match, viz.: $\frac{1}{4}$, $\frac{3}{8}$, 7-16, $\frac{1}{2}$, $\frac{5}{8}$ inch. The driving pulley is 10 inches in diameter, 3 inch face, and should make 300 revolutions per minute. The machine may be driven from a main line if it is level with the pulley in top of machine. If not, a counter will be needed, to set on a level with the pulley, and eight or ten feet distant. Weight of machine, not boxed, 1,450 pounds. Power required to drive mortiser, 1 horse-power. Belting required: 25 to 30 feet $2\frac{1}{4}$ inch belt, as the distance of counter belt may require.

Wood and Iron Working Machinery.

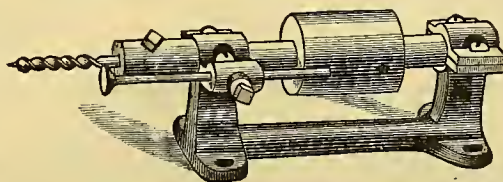
Large Foot Mortising Machine.



This machine needs no special recommendation or description, as it has been long and favorably known throughout the United States and foreign countries. It is one of the best Foot Mortisers ever put into the market. The cut represents the machine set up ready for use.

Small Boring Shaft.

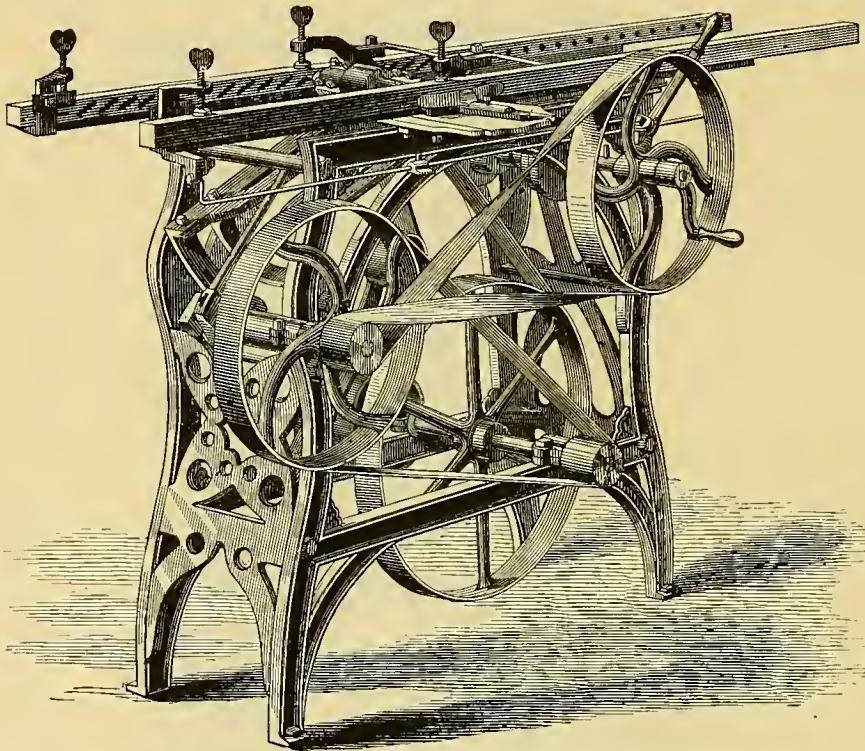
This is a convenient little machine for any kind of light work, as it can be set on a bench, or in any convenient place, and takes up but very little room. It has a shaft, with boxes and pulley, and can be used for bor-



ing blind stiles, or any small holes. It is not suitable for any bit larger than $\frac{3}{8}$ inch. The pulley on the shaft is $2\frac{1}{2}$ inches in diameter, 3 inch face, and should make 1,000 revolutions per minute. The driving belt should be 2 inches in width.

Gear's Illustrated Catalogue of

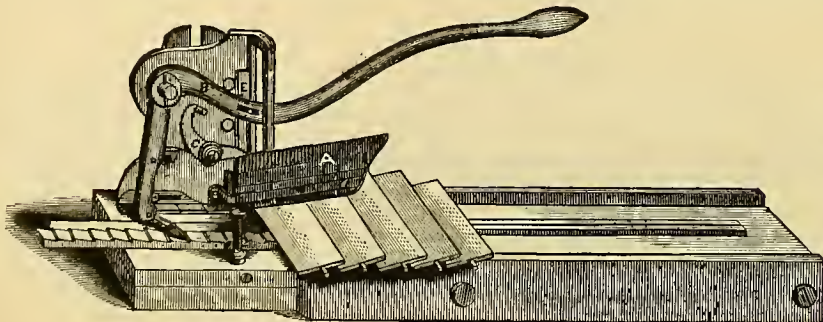
Blind Stile Boring and Mortising Machine.



This machine is for making the mortise for stationary shades, and boring holes for rolling shades in the stiles for window blinds. It is entirely automatic in its operations, and either bores the round hole for the reception of the pivot of turning slats, or mortises the recesses for the reception of the end of those slats designed to be permanently fixed at a certain angle. The latter are made, on this machine, by means similar to those used in boring a simple round hole, the tool being a reciprocatory or traversing burr, or bit, which can be used on hard wood, knotty pine, and other obstinate descriptions of wood, where ordinary machine chisels fail.

This machine will make mortises of any length, from a round hole up to 2½ inches, and of any width, depth and angle desired in a window blind, leaving the mortise free from chips, ready for the slat, and is self-operating in all its parts. All the workman has to do is to put in the stiles and set the machine in motion, when it does its work, and having done it, stops. It does the work on both sides at once, at the rate of sixty mortises per minute. The bit or burr that does the work is a very simple and cheap affair, not liable to be broken, and costs but ten cents. This machine is wholly of iron and steel, thoroughly built, easily set up and put in operation, and not liable to get out of order. Tight and loose pulleys 7½ inches in diameter, 2½ inch face, and should make 650 revolutions per minute.

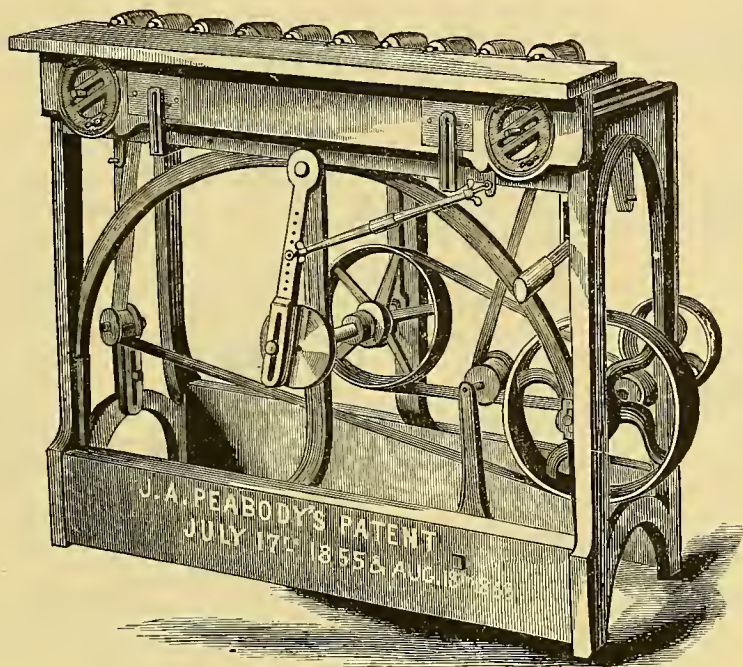
Patent Blind Wiring Machine, for Pivot Blinds.



This machine drives the wires or staples into *either* or *both* the slats and rods, without the necessity of marking or pricking either, and drives the wire accurately in the centre, or at any angle, as may be required, in each lath or slat. It spaces the rod and drives the wires any given distance apart, and, if desired, attaches the two together.

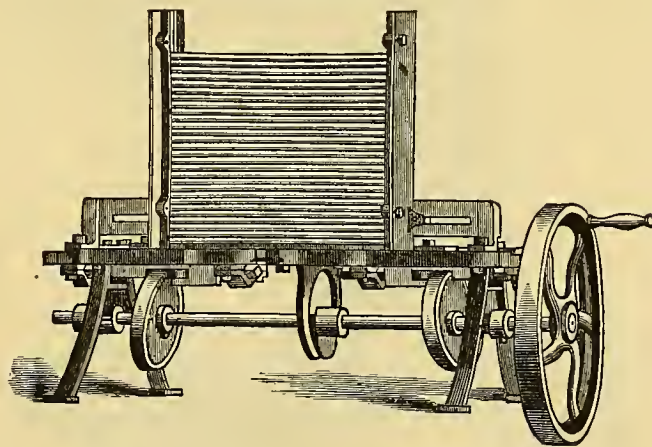
Wood and Iron Working Machinery.

Improved Blind Stile Mortising Machine.



This machine, for boring and mortising window blinds, the manufacturer claims, excels all other machines for the same purpose. It accomplishes its work with exceeding dispatch, and leaves a perfect mortise free from chips and ready for use. A mortise can be made from $\frac{1}{4}$ of an inch to $2\frac{1}{4}$ inches in length, and $\frac{3}{4}$ of an inch in depth.

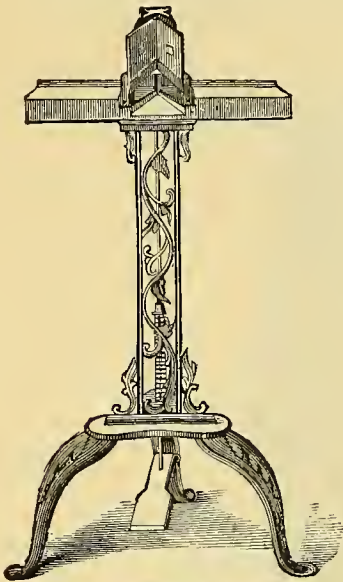
Blind Slat Crimping Machine.



This machine is used for compressing the ends of stationary blind slats so as to fit and fill the mortise. It may be operated by hand or power. The slats are placed in a hopper, or receiver, at the top of the machine, and the rotary motion given to the balance wheel operates the dies by a combination of cams, and this motion will drop a slat, carry it to the dies, compress both ends, and throw it off. Any size dies may be ordered with the machine, and any length slat can be worked. The speed may be from 30 to 100 revolutions per minute, as desired.

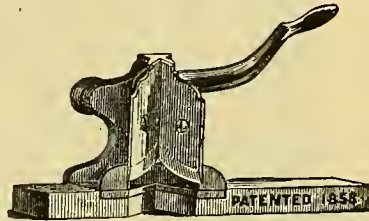
Gear's Illustrated Catalogue of

Patent Foot and Hand Mitering Machines.



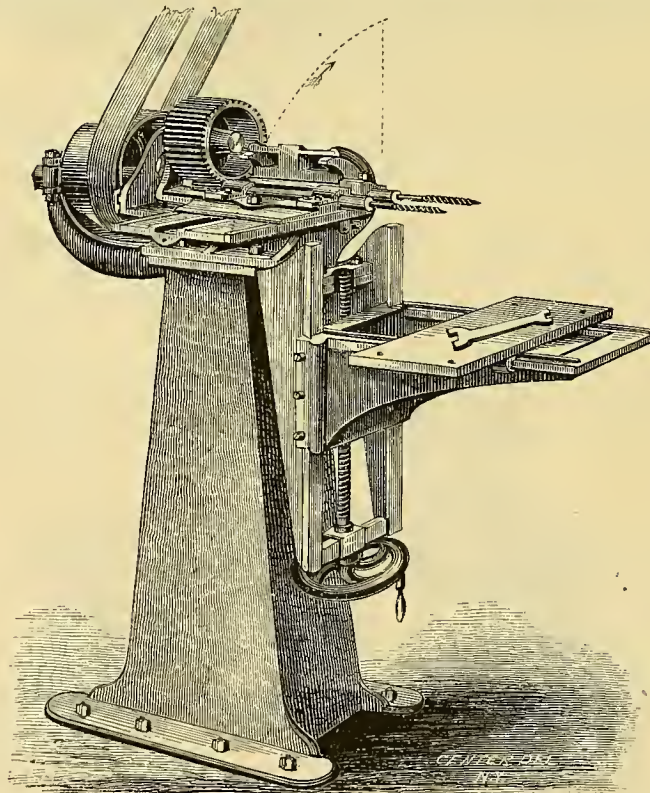
Foot Mitering Machine.

These machines are intended for cutting or mitering mouldings into doors, panel work, picture frames, and a great variety of other work of a like character. They have a cast iron frame, with two knives, set at right angles, so arranged that by one motion of the lever the moulding is cut in two and both angles of the miter made. The knives are set so as to cut an ACCURATE MITER, and are of such shape as to make a DRAWING CUT, leaving the work as smooth as when cut with a plane or chisel, thus making a perfect joint. Both the foot and the hand machines are constructed on the same principles and are intended for the same purposes. The foot machine has a light iron treadle to operate it.



Hand Mitering Machine.

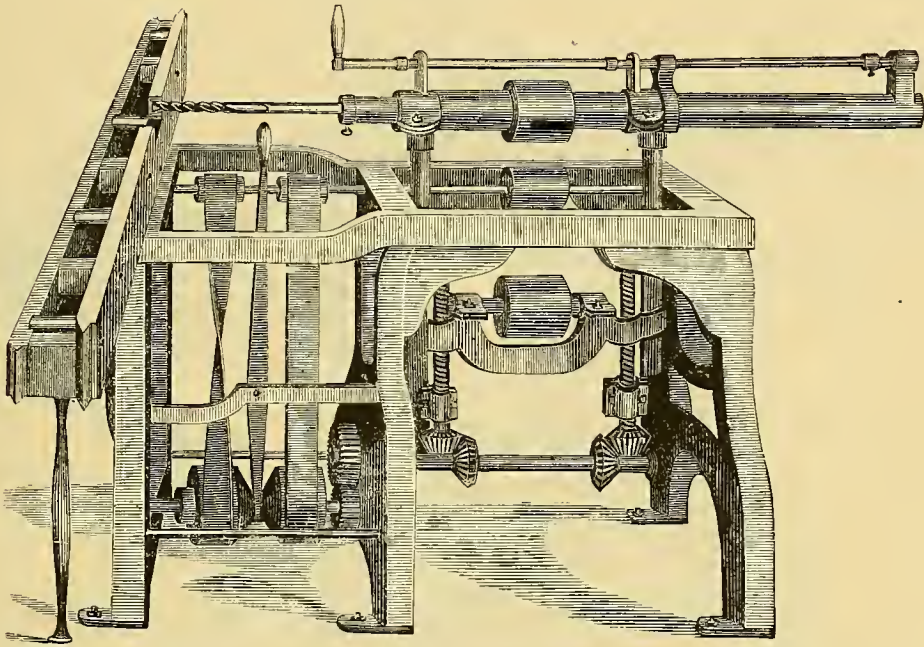
Improved Adjustable Double Spindle Boring Machine.



This Boring Machine is made entirely of iron, with two spindles, which can be adjusted towards and from each other. When close together they are one inch from centre to centre, and they can be set apart to six inches. A compound table, which slides in and out, and also up and down, serves to support the work. It is strong and firm, and is run at a speed of 900 to 1,200 revolutions per minute. It is used to great advantage for boring two holes at a time, and also by chair, lounge and table manufacturers for producing slots and mortises.

Wood and Iron Working Machinery.

Hoit's Patent Horizontal Car Boring Machine.



The many advantages of this machine over all others for the purpose it is intended, is worthy the attention of users. For accuracy and ease of working, capacity and speed, it is not excelled. It will do more than double the amount of work that any other machine now in use can do in the same time, for the reason that the machine is self-regulating by means of a small lever that the workman can move without changing his position at the machine. The boring bar can be moved up or down to any required point instantly, instead of raising and lowering the table, as by other machines, and that by hand. The workman has nothing to do but put the timber on the table and shift it to different points, and the machine does the work.

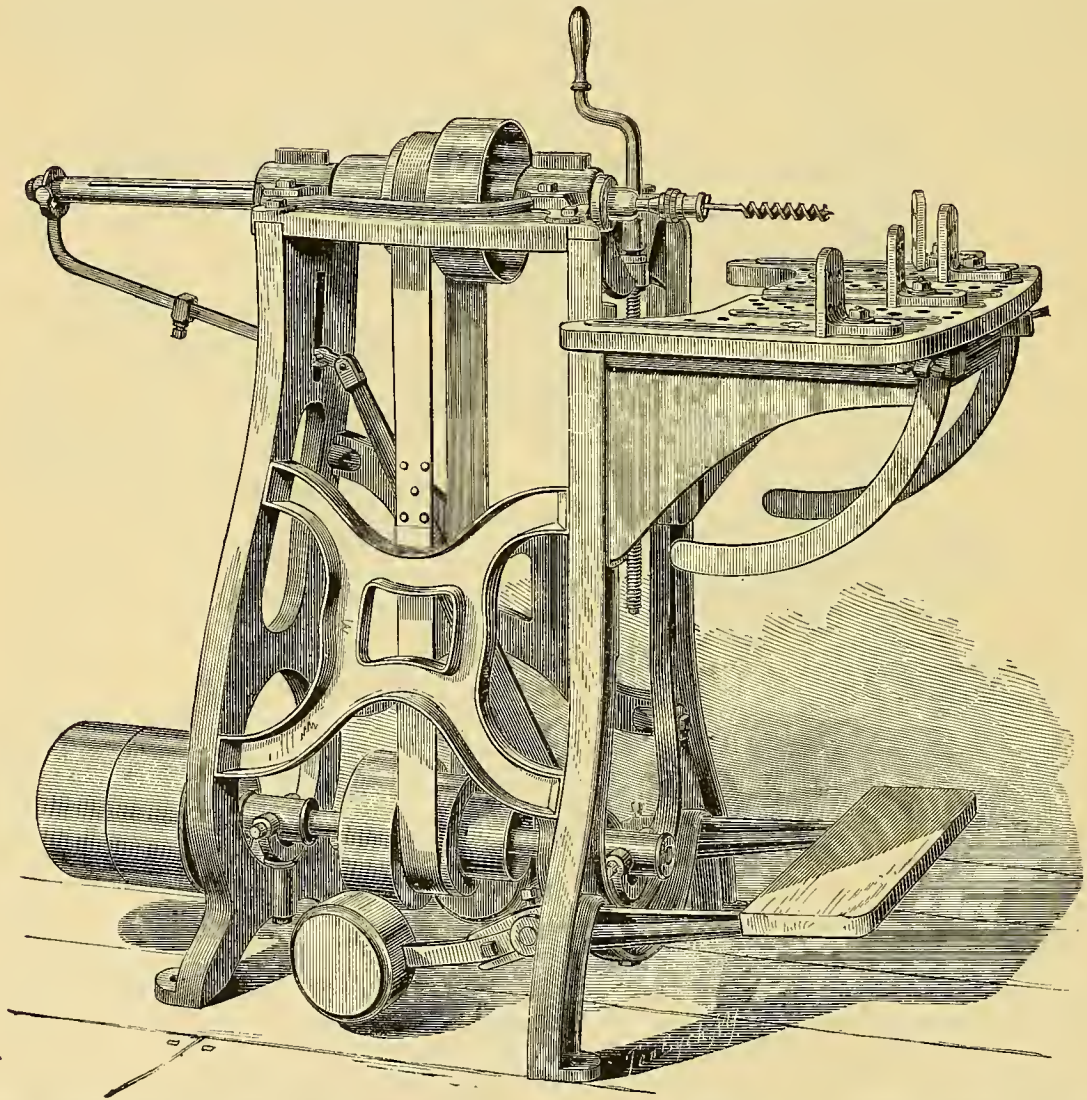
Another great advantage over other machines is in *end* boring, such as for joint-bolts and for truss-rods in car frames, or any angular boring. The timber can be placed in any required position, and will remain stationary until finished. The machine is so arranged that any desired length of auger can be used, from twenty-two inches down to the shortest size. The accuracy of the machine will be at once seen, for the table or bed is made stationary, and is perfectly parallel with the boring bar, consequently it must always bore correctly. It is also arranged so that the auger is held close to the timber, so that it can be seen exactly when the boring bar is set at its proper height. The boring bar is moved up and down by means of a friction clutch; consequently, as soon as the pressure is let off the lever, the motion stops; and it is also so arranged that it is self-supporting and will not move up or down unless the lever is applied.

This machine is adapted to all kinds of work, but more particularly to railroad car building, and agricultural works. It is well and substantially made, and not liable to get out of order, and is simple and easy to manage. It is made of iron and steel, except the table, which is hard wood, eight feet long and eleven inches wide, with five iron rolls to move the work on. The bit will raise nine inches above the table. The tight and loose pulleys on the counter shaft are ten inches in diameter, four inch face, and should make 350 revolutions for a one-inch bit. Floor space required for the frame of the machine, four by three feet.

A. S. GEAR is the sole manufacturer and agent of this machine.

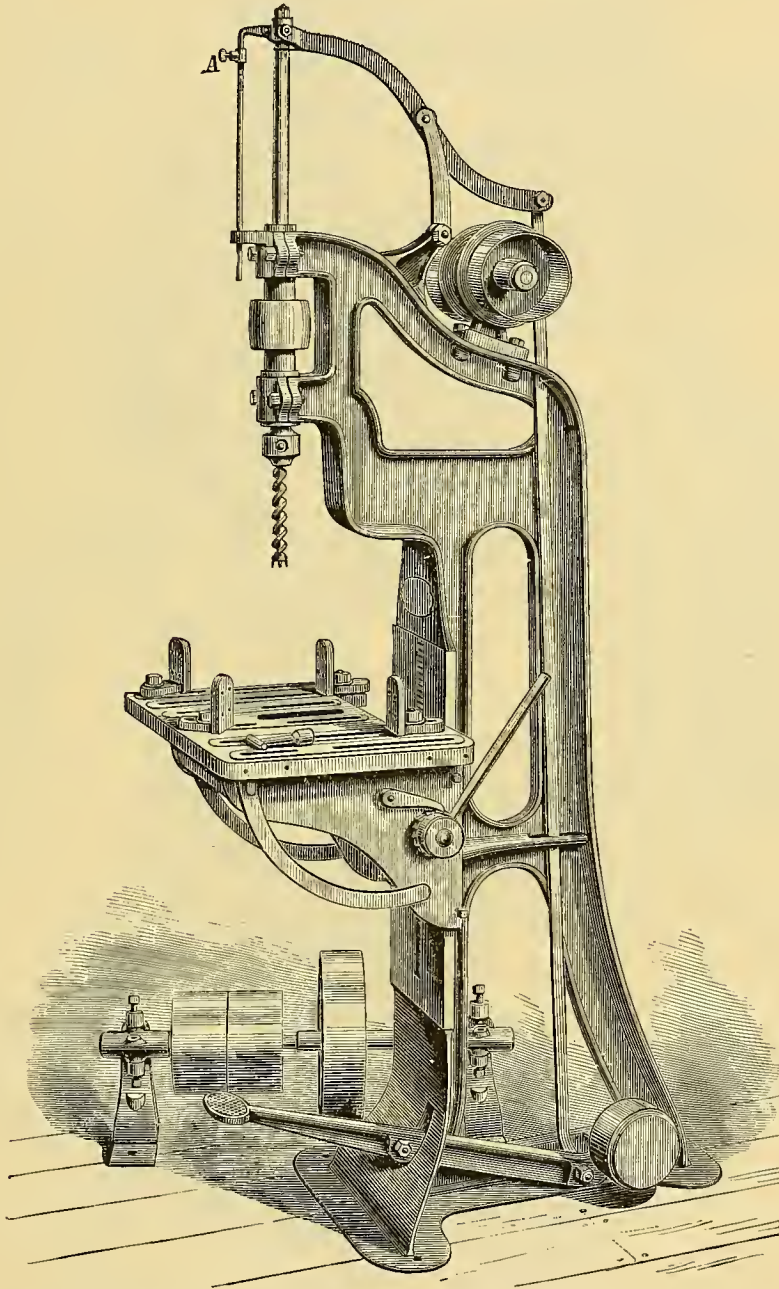
Gear's Illustrated Catalogue of

Universal Boring Machine.



The prominent feature in the construction of this machine is its capability to bore a hole at any angle or direction desired. Any sized bit required is inserted into the chuck, which is adjustable to fit large and small shanks. The mandrel which carries the chuck is made to traverse by a foot lever, so as to bore any depth up to twelve inches. The mandrel is driven by a belt from a cone pulley of three faces, giving the proper speeds for different sized bits. Slots and stops upon the table enable the work to be set at any desired angle on the horizontal plane, while the table can be set on an incline to any angle not exceeding forty-five degrees. The table is twenty-one inches wide, with fifteen inches slide, and it can be raised or lowered fifteen inches, enabling one to bore in the centre of thirty inches. The counter-shaft rests in self-adjusting boxes, and has a tight and loose pulley eight inches in diameter. The traversing mandrel is of the best quality of steel, and the machine is otherwise made of iron in a substantial manner. The several adjustments enable the operator to do all kinds of light and heavy boring with ease and great rapidity. An adjustable chuck, for holding various sizes of rod-bits and augers, accompanies each machine. The counter-shaft should make 900 revolutions per minute.

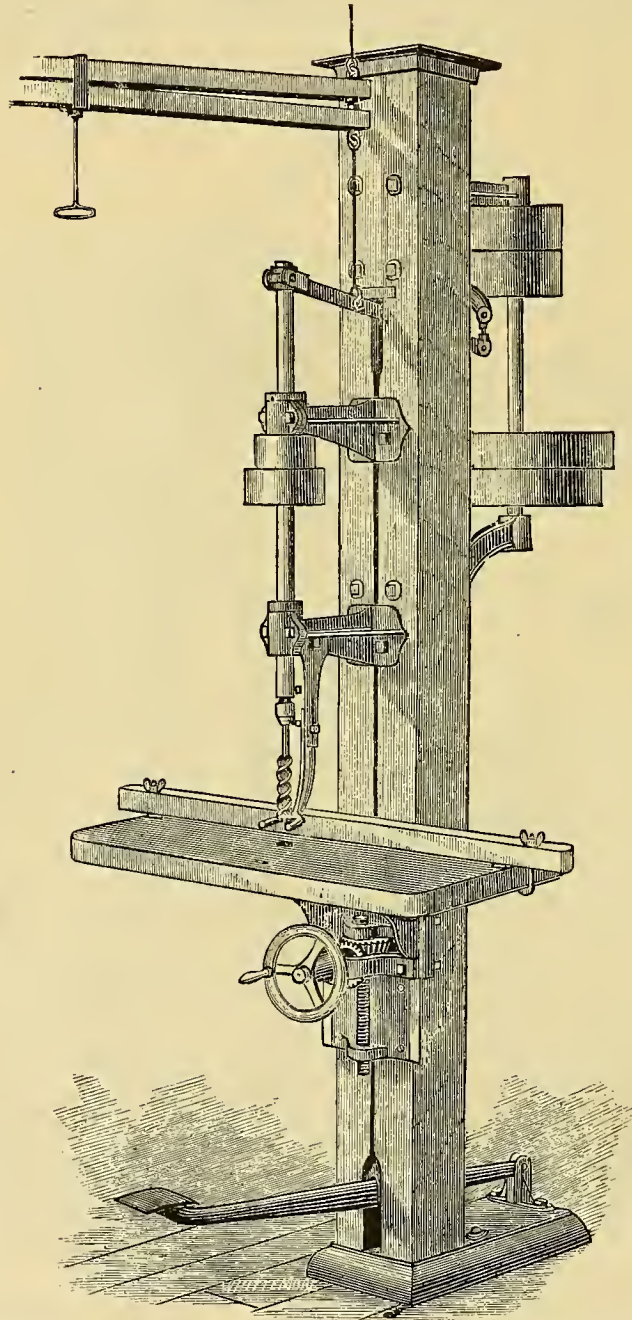
Upright Boring Machine.



The accompanying cut represents an improved upright boring machine of a new pattern and design. The steel mandrel is $1\frac{1}{4}$ inches in diameter, is traversable, and can be made to bore 10 or 14 inches deep as may be ordered. A commodious treadle connects with the mandrel and brings it down to the required depth, which can be changed and accurately adjusted. The bit returns by means of a weight operating on the bottom of the machine and is entirely out of the way. The table is gibbed to the machine and slides up and down 22 inches, with rack and pinion. It is made with an adjustable table for boring at any angle required.

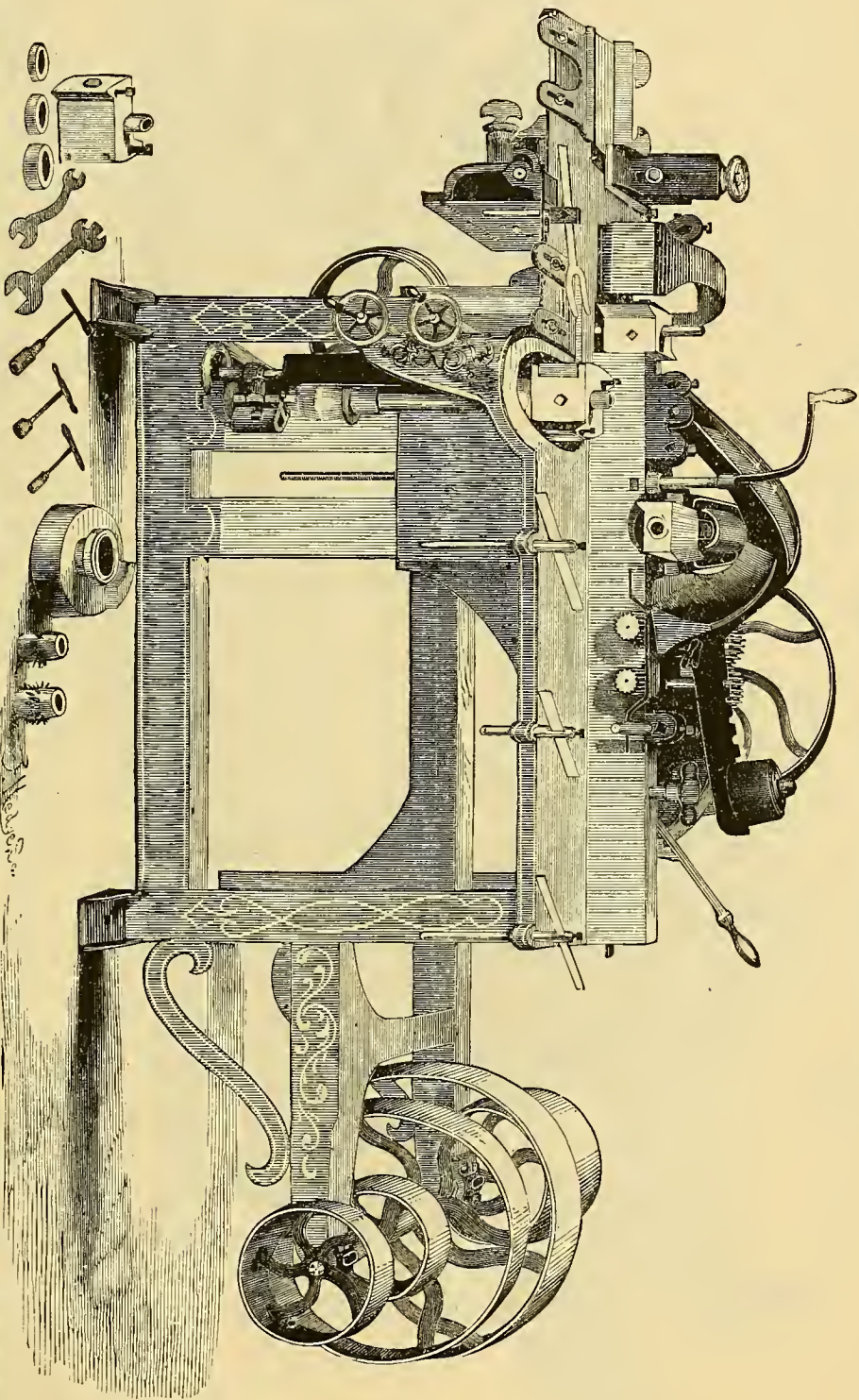
Gear's Illustrated Catalogue of

Improved Upright Boring Machine.



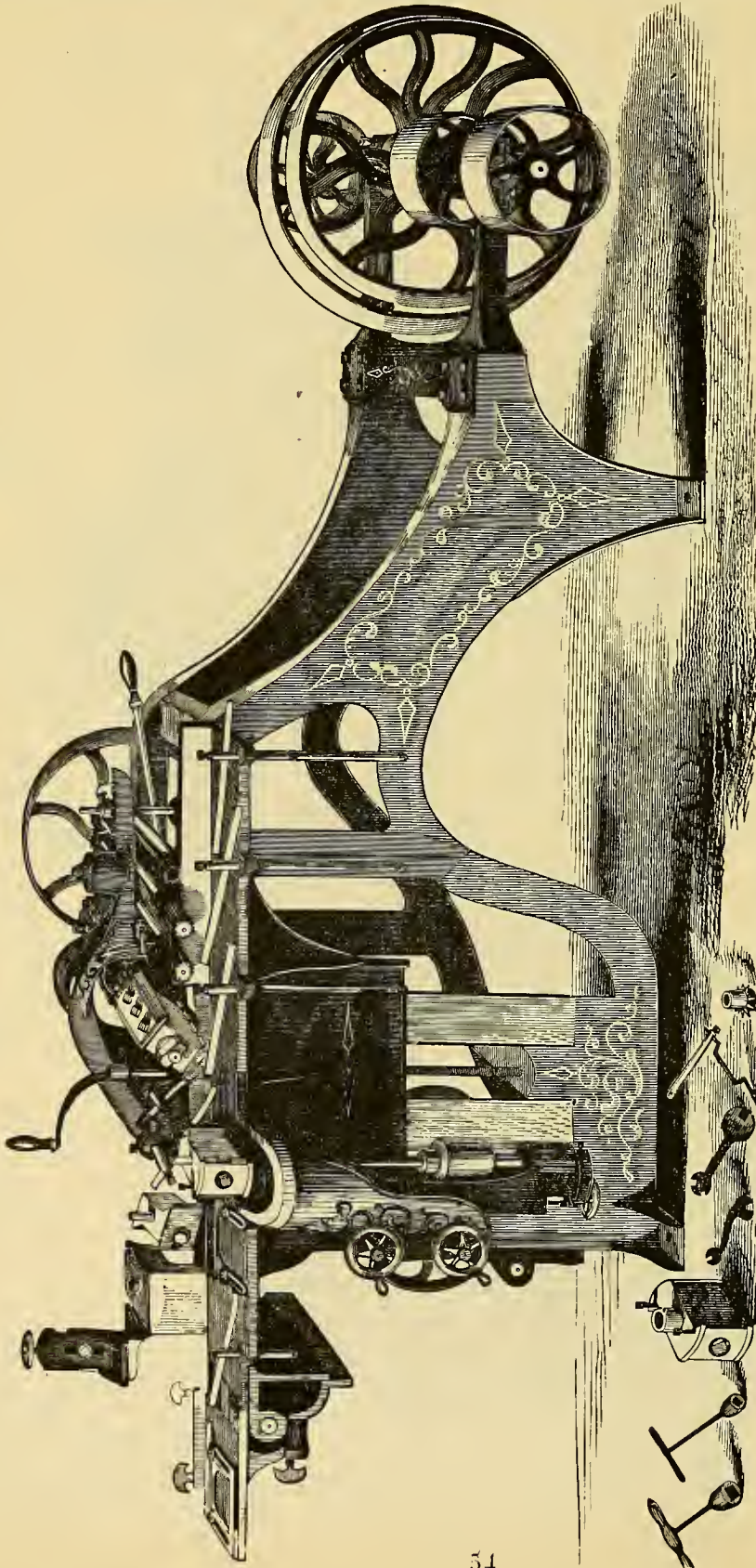
This is a valuable machine for all wood-working establishments. It is suitable for light and heavy boring. The accompanying cut gives a correct representation of the machine in all its details. The table is $3\frac{1}{2}$ feet long, 15 inches wide, and is raised and lowered by a hand-wheel and screw. It has two speeds, which is quite important in shifting from light to heavy work. It has a rest on the table to guide the stuff, readily adjusted by thumb-screws. It has, also, an adjustable pressure fork, for holding down the lumher while being bored. The tension of the spring is regulated by a hand-screw, as shown in the cut. The machine is held in position by an iron cap. It is provided with a socket for holding common square shank auger-bits, or, by removing the socket, round shank machine auger-bits can be used. Six sizes of bits go with the machine, $\frac{3}{8}$, 7-16, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and 1 inch. All additional bits are charged extra. Tight and loose pulleys, 8 inches in diameter, $3\frac{1}{2}$ inch face, and should make 400 revolutions per minute.

Light Moulding Machine.



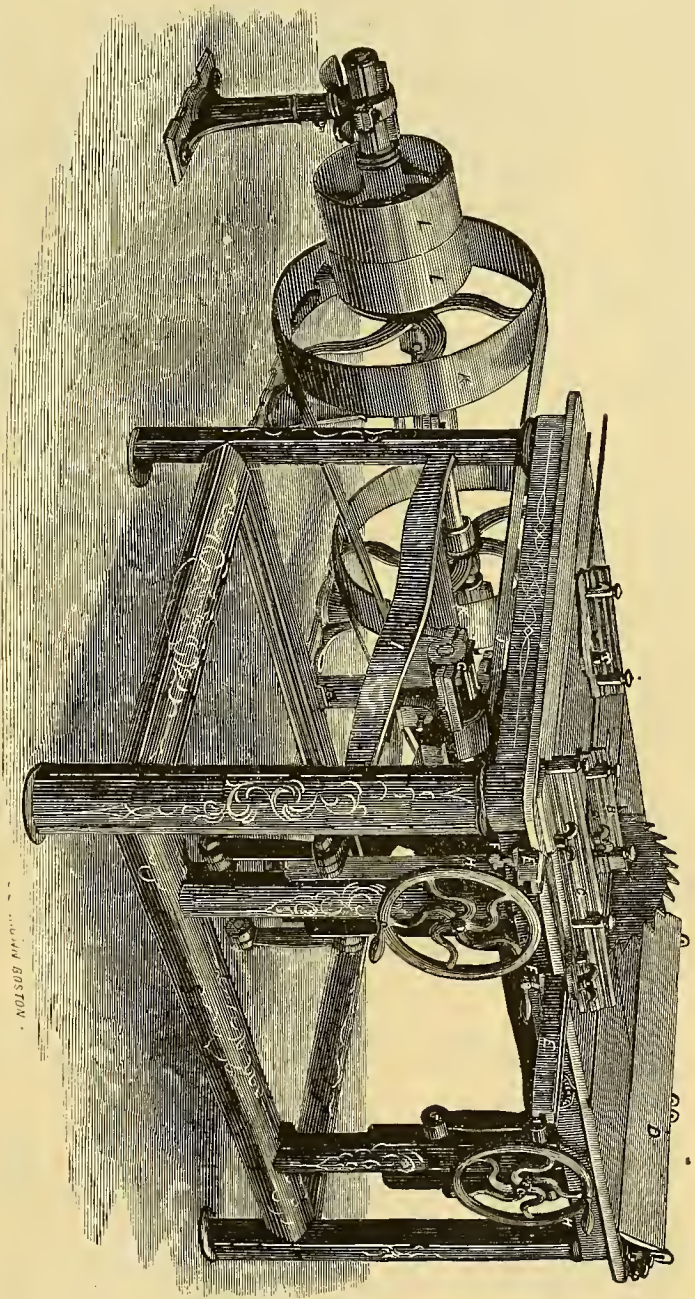
This machine will stick sash, stick mouldings on three or four sides while once passing through the machine, raise panels, plane blind shades and round the edges at the same time; groove door slits, or rails, and stick mouldings on them at the same time, or joint the edge, plane and joint pickets, &c. It is built ENTIRELY OF IRON AND STEEL. The bed is gibbed on to the frame, so as to be firm, and is moved up or down by a single screw, with crank, requiring no set screw to hold it in place, thus saving much time in setting it. It has four rotary cutter heads, one above the table like a sash machine, which lies horizontal, two upright ones, by the sides of the table, and an under one when required, so arranged that one of them may be moved up or down, out or in (and set on any angle so as to cut any required bevel with a straight cutter), with a screw and crank, at the option of the operator. The caps on the heads which hold in the cutters are made of WROUGHT IRON; the cutter shafts are of the best cast steel, as are also the feed rolls. The cutter shafts are arranged so as to PREVENT ALL VIBRATION endwise. Tight and loose pulleys, 9 inches in diameter, 4 inch face, and should make 850 revolutions per minute.

Improved Moulding Machine.



This machine will do a great variety of work, such as sticking sash, getting out sash and blind rails and stiles, grooving and jointing door rails and stiles, planing fence pickets on all sides at the same time. It works four sides of stuff six inches wide by three inches thick. Being built entirely of iron and steel, with the frame cast in a single piece, it is very firm and strong, and must always remain true. The table is firmly gibbed to the frame, and raised or lowered with a single screw, needing no set screws to keep it in place firmly. The table drops about 14 inches, so that any width of door rails can be grooved and jointed by it. The caps to the cutter heads are wrought iron; the cutter shafts are cast steel. The outside cutter head is adjustable to any angle or can be moved in or out, or up or down, with screws. The cutter heads and their shafts are made and balanced with the greatest care, so that they can be run at a very high speed, which is very essential in doing good work, especially where one cut is against the grain of the wood. A patent spur feed is applied to this machine, which is very useful in grooving door stuff, and many other kinds of work where long teeth can be applied to that part of the work that the forming cutters remove. This feed not only breaks up the wood, thereby fitting it for the cutters, but makes the feed perfectly sure. This machine is built in the most careful and thorough manner, and is thoroughly tested before leaving the works, and is warranted to give satisfaction on a trial of thirty days. Tight and loose pulleys on counter-shaft, four inch face by nine inches in diameter, and should run 900 turns per minute.

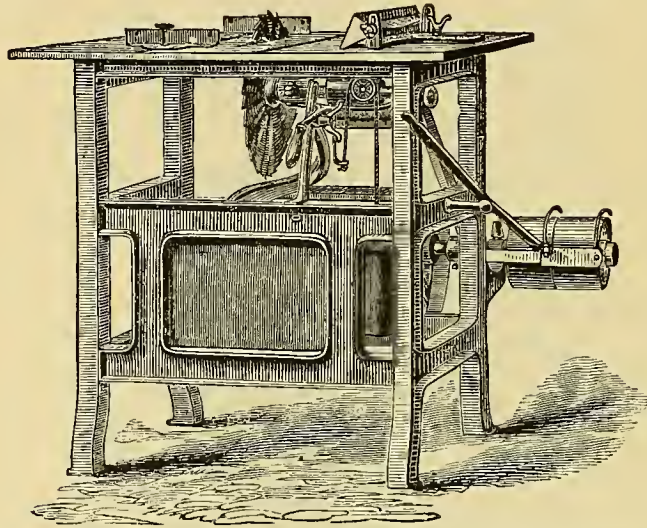
Adjustable Circular Saw Bench.



The attention of all interested in Circular Sawing Machines is called to the above representation of an improved Circular Saw Bench, and we feel assured, that upon examination, its merits will be apparent to every one. It gives entire satisfaction wherever it is used. The following is a description of its parts: A, B and C are adjustable slide rests, used for squaring and sawing any desired angle. D is the splitting gauge, or rest, adjustable to a mitre. E E are extension slides. F F are handles to fasten extension slides at any desired place. G G, the self-oiling arbor boxes. I I, the adjustable swinging frame that the boxes rest on. H H are hand wheels which raise and lower the saws. J, the belt from the counter-shaft. K K, driving pulleys, 24 inches in diameter, 6 inch face. L L, tight and loose pulleys, 12 inches in diameter, 6 inch face. There are four kinds of this machine, viz.: No. 1 (large size), for two saws—size of top, 58½ by 42½ inches; No. 2 (large size), for one saw—size of top, 50 by 42½ inches; No. 3 (medium size), for one saw—size of top, 50 by 42 inches; No. 4 (small size), for one saw—size of top, 42 by 42 inches. They are all furnished complete with counter-shaft and self-oiling loose pulleys.

Gear's Illustrated Catalogue of

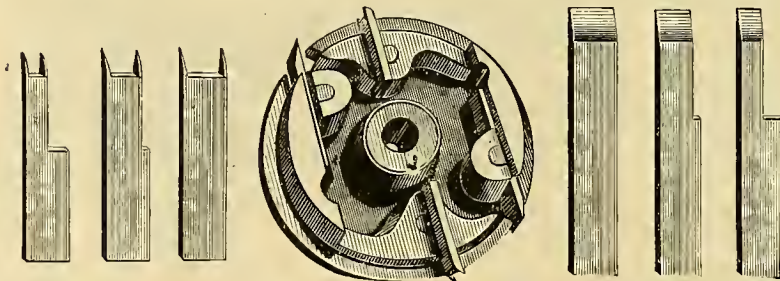
Adjustable Circular Saw Bench.



The Saw Bench illustrated above is all iron and steel. The table is 36 by 36 inches and made fast to the frame. It has a splitting rest adapted to sawing bevels, and two squaring rests, which are made to swivel and slide in grooves, one each side of the saw, for sawing miters. The saw arbor is run in bearings at the upper end of a frame swung from the bearings of the counter-shaft. The bearings are self-oiling. The saw is nicely balanced, and can be instantly raised or dropped to any desired position above the table, and firmly held there by simply turning a thumb-nut. A grooving head can be run upon the arbor if desired, a section of the table being made to take out for that purpose. This Saw Bench is compact and well built in all its parts. The ease with which it can be adjusted, its adaptedness to any kind of work, and its accuracy of execution, will commend it to all desiring a single adjustable saw bench for pattern-making, or other similar work.

There is another Saw Bench similar to this, made by the same parties, with two saws, and having a table 38 by 44 inches. The section between the two saws can be readily removed in case a grooving head is to be used upon one of the arbors. It is furnished with a bevel rest, two short squaring rests, swiveled for mitering, and also a long squaring rest. All the rests slide in grooves, and can easily be removed to admit of sawing long stuff. The saw arbors are swung from the bearings of the counter-shaft as before, and are so adjusted that only one saw appears above the table at a time. In fact, the raising of one saw drops the other, thus making impossible the accidents which so frequently occur while using those double saw benches where each saw is operated independently. One saw can be dropped and the other raised to any desired height above the table and firmly fastened there in two seconds. If desirable, both saws can be brought above the table at the same time, by fastening the one already up, and then lifting the other to the required height and fastening it there, but not when each arbor swings naturally.

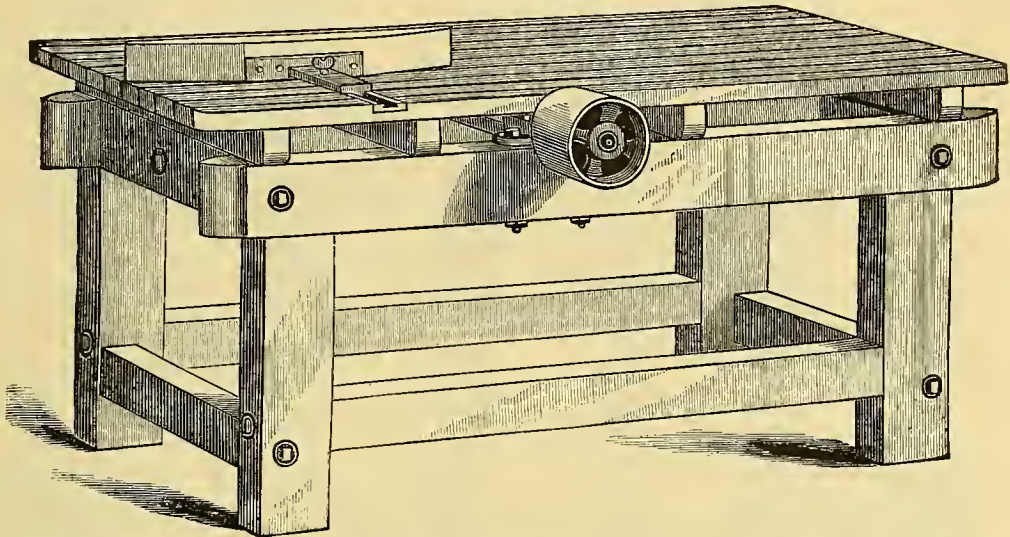
Grooving Head and Cutters.



This head is used for cutting gains and grooves across the grains on various kinds of work, such as window frames, door stuff and cabinet work. It can also be used in a Tenoning Machine, by having it fitted with an arbor to suit the machine.

Wood and Iron Working Machinery.

Splitting Saw Table.



The above cut represents a Splitting Saw Table, made in the most thorough and workmanlike manner from selected and well-seasoned Western ash, with birch, maple or cherry tops, made from narrow strips glued together. The top is hinged at one end and has a raising screw (not shown in the cut), for elevating the top so as to accommodate itself to the stock to be sawed. The Splitting Gauge, which is furnished with each machine, is shown in the illustration. A grooved track is let in on the top, and a light Cut-off Carriage is added when ordered.

There are six sizes of this machine, of the following dimensions :

No. 1 is 2 feet 10 inches wide by 3 feet 8 inches long ; size of pulley, 4 inches in diameter, $4\frac{1}{2}$ inch face, with No. 1 cast steel arbor.

No. 2 is 3 feet wide by 4 feet long ; the pulley is $4\frac{1}{2}$ inches in diameter, 5 inch face, with No. 2 cast steel arbor.

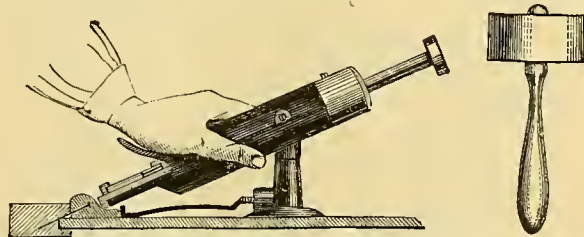
No. 3 is 3 feet 3 inches wide by $4\frac{1}{2}$ feet long ; size of pulley, 5 inches in diameter, 5 inch face, with No. 3 cast steel arbors.

No. 4 is 3 feet 6 inches wide by 5 feet 6 inches in length ; the pulley is 6 inches in diameter, $6\frac{1}{2}$ inch face, with No. 4 cast steel arbor.

No. 5 is 3 feet 8 inches wide by 5 feet long ; the pulley is 7 inches in diameter, 7 inch face, with No. 5 cast steel arbor.

No. 6 is 3 feet 10 inches wide by 6 feet long ; the pulley is 8 inches in diameter, 8 inch face, with No. 6 cast steel arbor.

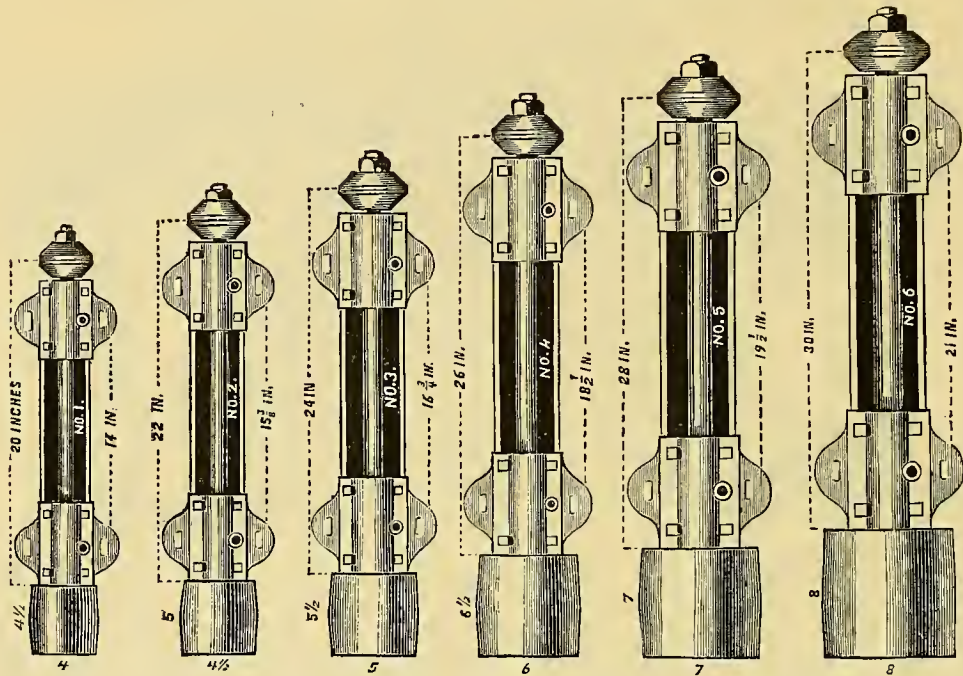
Thorndike's Brad Driver.



This machine, as the cut indicates, is for nailing mouldings to the panels of doors. The durability and simplicity of this machine, and the rapidity with which the work can be done over hand labor, makes it almost an indispensable article to manufacturers, or those who only make doors for their own business. Being so generally used a further description is unnecessary.

Gear's Illustrated Catalogue of

Patent Saw Arbors,



With New Patent Self-Oiling Boxes.

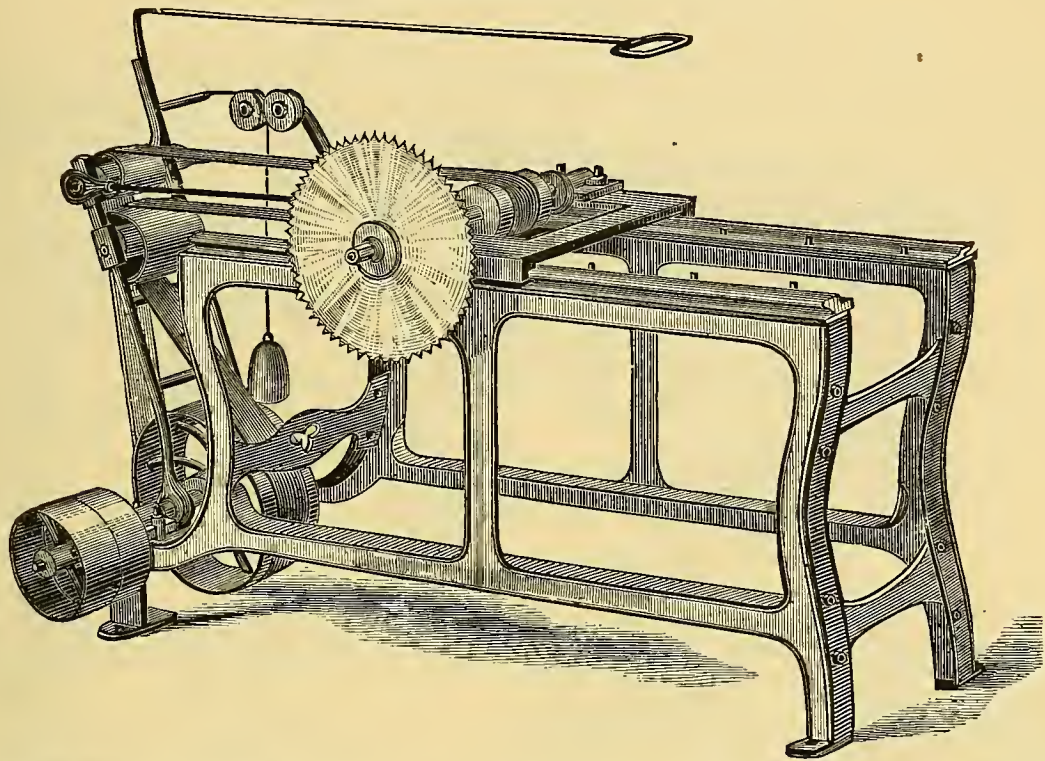
The above cuts represent six sizes of Saw Arbors. These arbors are made of the best cast steel, with the best of workmanship, and are warranted to give perfect satisfaction. The boxes are connected together by a strong web bed, and cannot get out of line. A new patent self-oiling box is used, which is simple, very effective, easily cleaned when necessary, and lined with the best quality of Babbitt metal. The bearings are long, which makes them durable, and prevents all springing or trembling of the arbor when in use. The journal next to the collar has several grooves in it, with corresponding rings in the box-lining, which prevents all lateral or end motion, and keeps the saw always in its place.

Dimension Table.

Number of Arbors,.....	1	2	3	4	5	6
Size of Saw (inches),.....	10	14	18	24	28	36
Distance from centre to centre of ear-pieces (inches),.....	14	15 $\frac{3}{8}$	16 $\frac{3}{4}$	18 $\frac{1}{2}$	19 $\frac{1}{2}$	21
Distance between Pulley and Saw (inches),.....	20	22	24	26	28	30
Diameter of Pulley (inches),.....	4	4 $\frac{1}{2}$	5	6	7	8
Face of Pulley (inches),.....	4 $\frac{1}{2}$	5	5	6 $\frac{1}{2}$	7	8
Diameter of Collars (inches),.....	3	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5	5 $\frac{1}{2}$
Diameter of Arbors (inches),.....	1	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$
Hole in Saws (inches),.....	$\frac{7}{8}$	1	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$
Length of Bearings (inches),.....	5	5 $\frac{1}{2}$	6	6 $\frac{1}{2}$	7	7 $\frac{1}{2}$

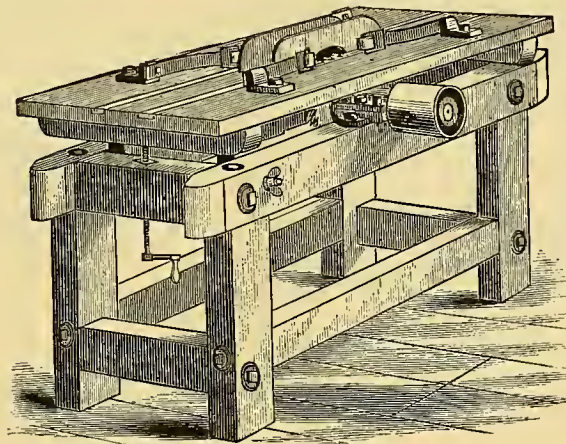
Wood & Iron Working Machinery.

Common Railway Saw.



This saw is specially adapted for cutting up box-boards and all light lumber, and is extensively used in door, sash and blind shops, cabinet and furniture manufactories, &c. The saw arbor is cast steel, running in Babbitted boxes, and attached to the sliding carriage. It is very easy to operate, and a large amount of lumber can be sawed up in a day. It has a substantial iron frame, and is well finished. The size of hole required for the saw is one inch. The tight and loose pulleys are $8\frac{1}{2}$ inches in diameter, $3\frac{1}{2}$ inch face, and should revolve 600 times per minute. Weight, boxed, 650 pounds.

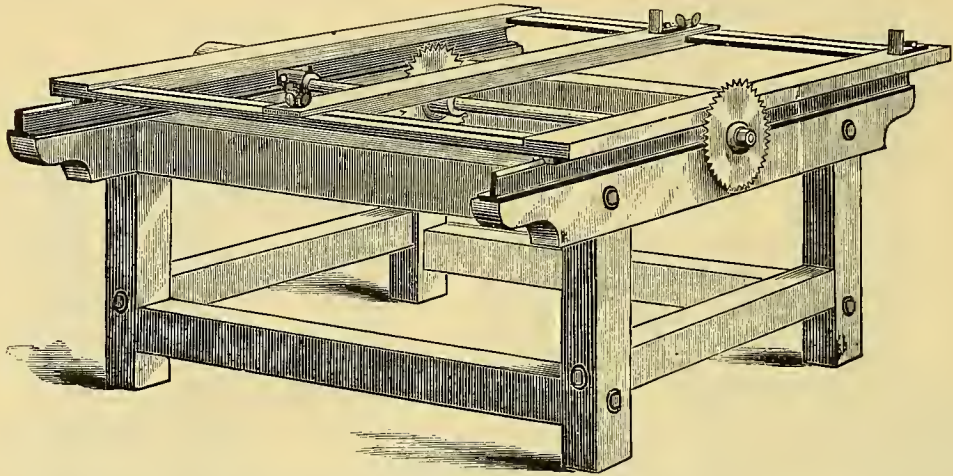
Box Board Matcher.



This machine is particularly designed to meet the wants of box makers, but is suitable for other light work. It has two sets of saws running on the same arbor—one for tonguing, the other for grooving. It will work stuff up to $1\frac{1}{4}$ inch thick. The frame is made of hard wood, is strong and substantial, and four feet long and twenty inches wide. The pulley on the arbor is $4\frac{1}{2}$ inches in diameter, 5 inch face, and should make 3,000 revolutions per minute.

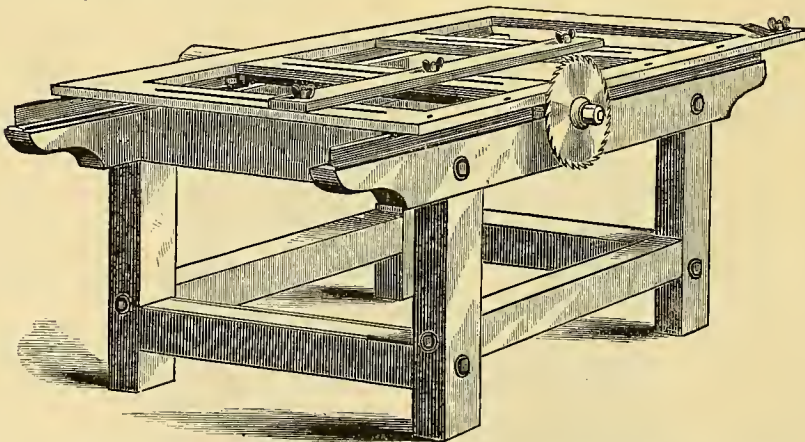
Gear's Illustrated Catalogue of

Box Board Double Cut-off Saw.



This machine is especially adapted to the work of making packing boxes. It cuts both ends of the stock at the same time. One saw is on an adjustable collar, which can be readily changed from one length to another. The arbor is made of the best cast steel, $1\frac{3}{4}$ inches in diameter. The pulley is 5 inches in diameter, $5\frac{1}{2}$ inch face, and should make 3,000 revolutions per minute.

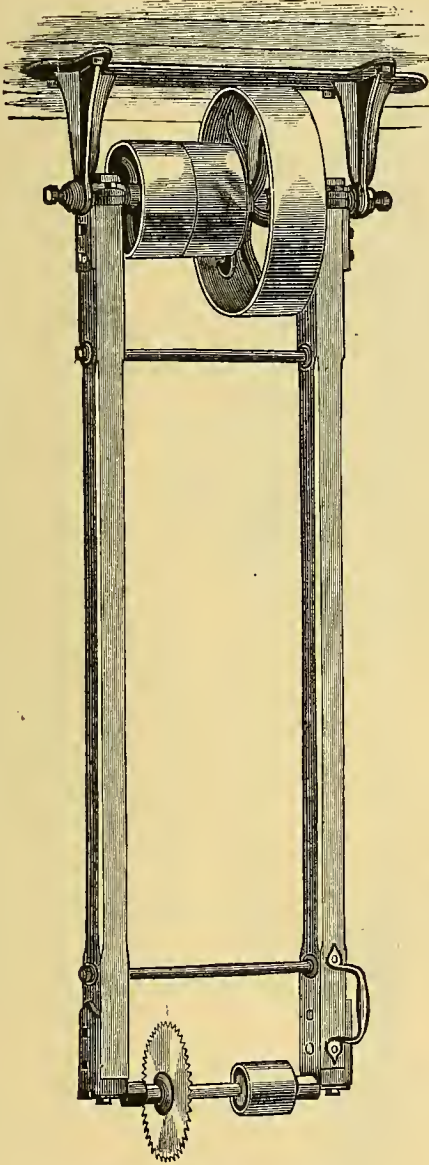
Box Board Edging Saw.



This machine is used by box makers for fitting up stock, and is an indispensable machine in a box manufactory. The arbor is made of the best cast steel, $1\frac{1}{2}$ inches in diameter. The pulley is 5 inches in diameter, $5\frac{1}{2}$ inch face, and should make 3,000 revolutions per minute.

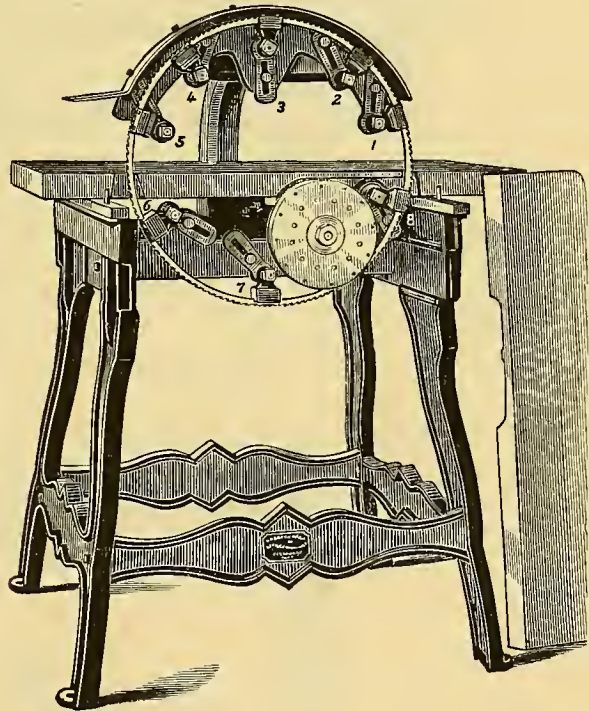
Wood and Iron Working Machinery.

Swing Cut-off Saw.



This machine is extensively used for cutting up stock for packing boxes, and any other light work, where it is required to be done in an expeditious manner. It has a counter-shaft, hangers and pulleys complete. The tight and loose pulleys are ten inches in diameter, four inch face, and should make 900 revolutions per minute. In ordering this machine give the distance between floors.

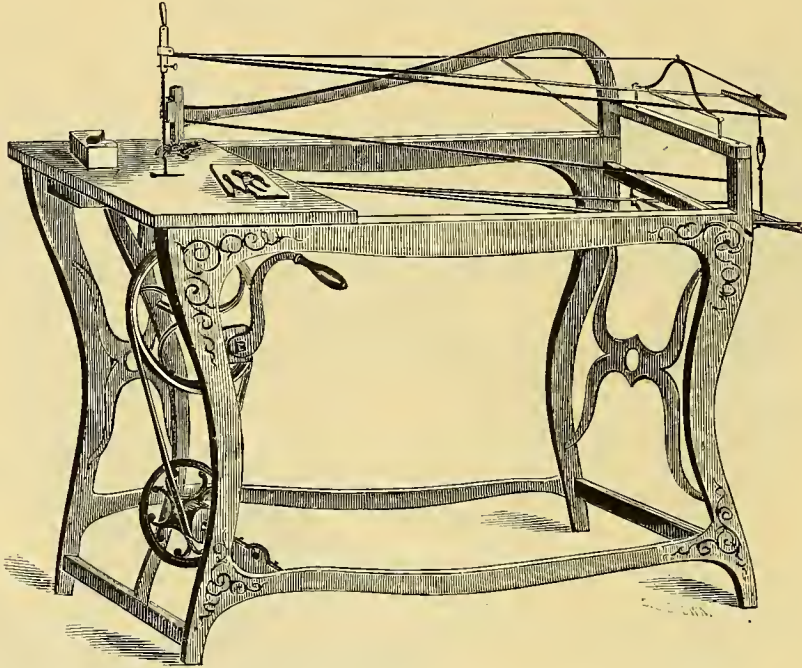
Patent Ring Saw Machine.



The Patent Ring Saw is designed for use in chair and furniture shops, and places where jig and scroll sawing is required. It has been in constant use for two years. But little labor is required to finish work sawed by this machine, as the saw being thinner back of the teeth, requires but little set, and consequently will saw smooth. Work done with the band saw can be done with this saw equally as well and with less labor and expense in keeping the machine in repair. The inside of the saw fits into a groove on the driver, which revolves the saw, so that the greater amount of work on the saw, the tighter the friction holds it; and when the saw is not at work, the friction is only sufficient to revolve the saw, thus consuming no more power than is required to do the work. On the opposite end of the driving shaft from the friction wheel are two pulleys, tight and loose, to receive a $2\frac{1}{2}$ inch belt, and this shaft should revolve 1700 turns per minute. The saws can be used from $\frac{1}{4}$ to 1 inch wide.

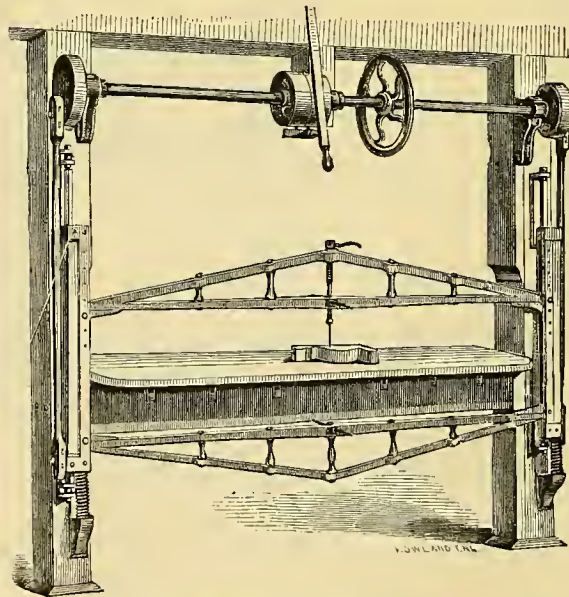
Gear's Illustrated Catalogue of

Foot or Hand Power Scroll Saw.



Parties not having power will find this a convenient machine, saving time and labor. It will work from the lightest up to four inch stock. It is strongly built and runs very easy.

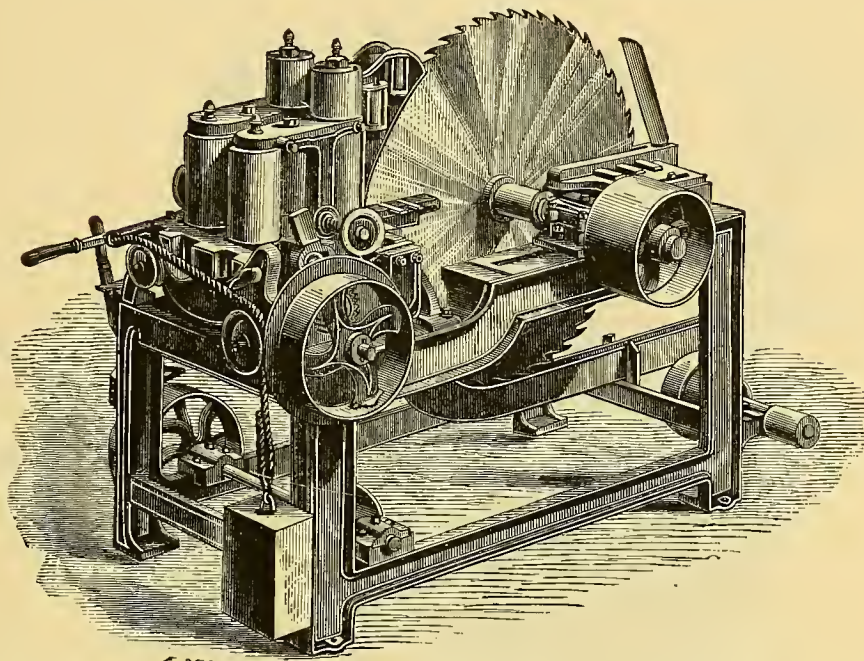
Jig or Gate Saw.



This cut represents a Jig or Gate Saw, for sawing all kinds of light work. It will run steady and without shaking the floor it stands upon. It has a four-foot gate, and will do very fine work.

Wood and Iron Working Machinery.

Circular Re-Sawing Machine.



This saw is constructed to set the feed-rolls oblique with the saw so as to saw siding. The rolls are adjusted simultaneously by tipping the table on which they are placed, so that if set to saw the board through the center of the edge, the rolls after being set oblique, require very little or no adjusting to saw two perfectly uniform siding boards from one piece. The feed is driven by iron cones, and may be made self-centering, so as to saw through the center of the board, dividing the inequalities of thickness, as may be desired, by simply changing the position of a single screw.

There are three sizes of this machine, viz.: One with four feed-rolls, all geared, with a saw 30 inches in diameter. Another with the same number of feed-rolls, all geared, and a saw 36 inches in diameter. The third and largest size also has the same number of feed-rolls, all geared, and a saw 42 inches in diameter. The receiving pulley on the saw arbor for a 30-inch saw is 12 inches in diameter and 6 inch face. For 36-inch saw, 13 inches in diameter, 7 inch face. For 42-inch saw, 14 inches in diameter, 8 inch face. It will be changed to suit the purchaser. The circumference of the saw should run 9,000 feet per minute.

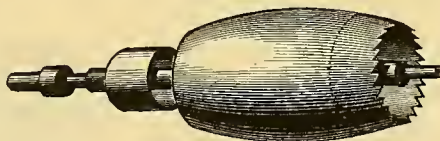
Cast Steel Cylinder Saws.

Figure 1.



Cylinder Saw.

Figure 2.

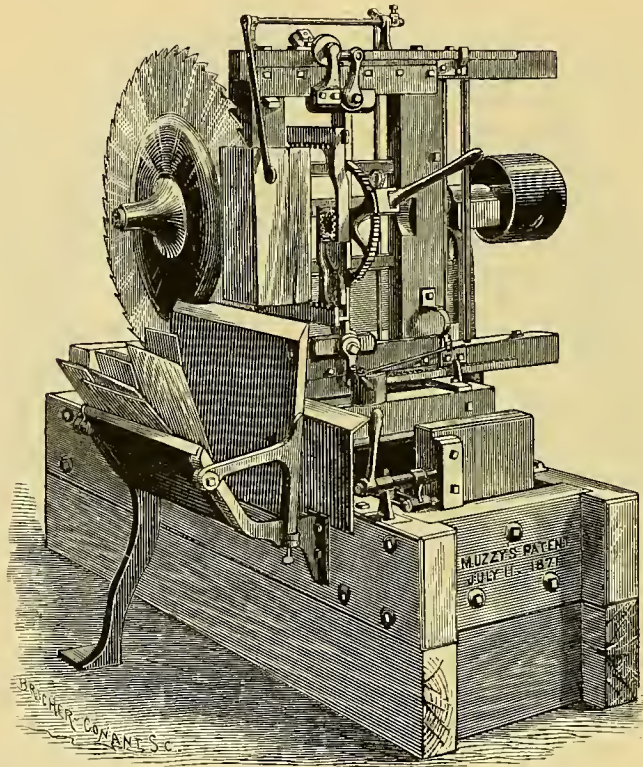


Bilging Cylinder Saw.

Figure 1 represents an improved Cylinder Saw—tapered, patent ground, smooth inside, without any projection, and made from the best quality of stock. Figure 2 represents a Patent Ground Bilging Cylinder Saw for Nail Kegs. Every Cylinder Saw is thoroughly inspected and tried in a frame at high speed, and is not permitted to leave the works until perfectly balanced and true.

Dean's Illustrated Catalogue of

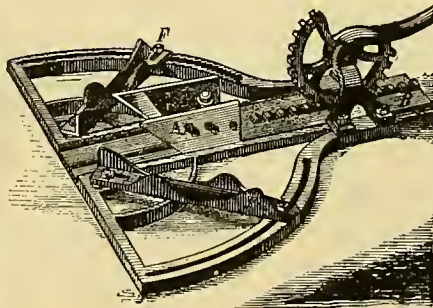
Improved Shingle Machine.



The above cut represents Muzzy's Patent Horizontal Shingle Machine. It is claimed for this machine that it is more perfect in its mode of operation and in its construction than any other shingle machine yet produced. The thickness of the shingle is gauged by a "lock set-work," similar to that used in the most approved machines of the old style; therefore, any competent sawyer can understand and operate it. It saws up a tapering block as closely as a square one, frequently sawing three or four shingles from the large end after the small end is out, thus obtaining all the shingles possible from the block. The shingle block stands upright, the saw commencing to cut in the middle of the block, and the carriage stopping when the shingle is cut off, whether wide or narrow. It can be easily arranged for sawing box boards or barrel headings.

Improved Adjustable Mitering Machine.

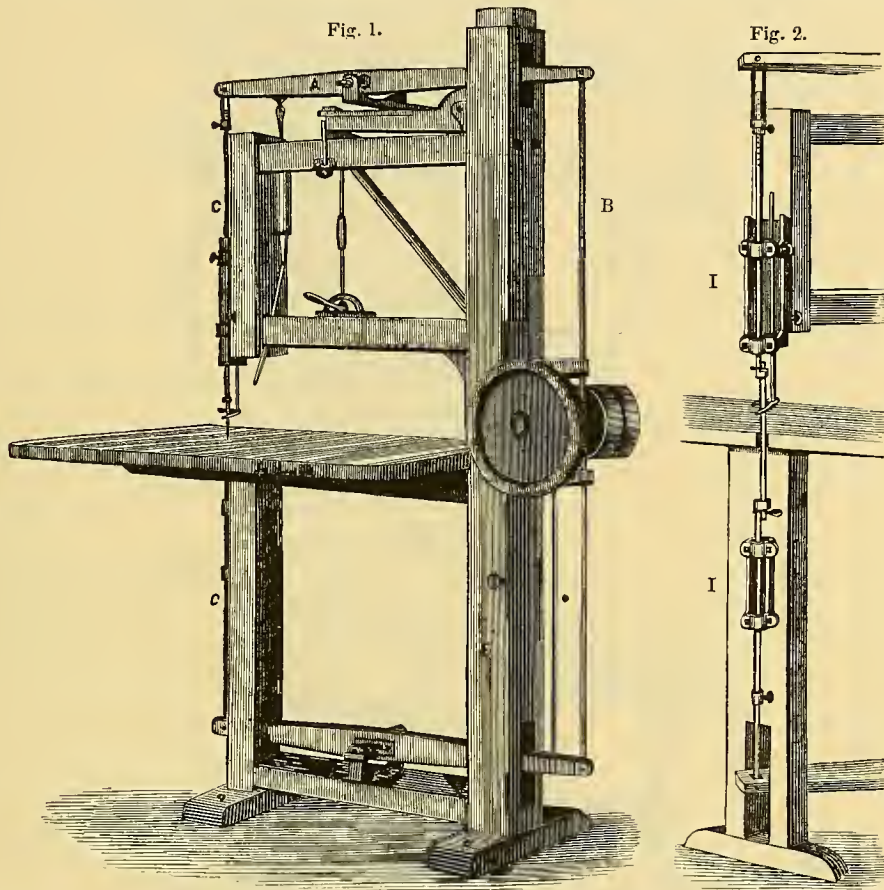
This machine is light and durable and can be worked either upon the bench or floor. It can be easily packed in a carpenter's tool chest. It is a semi-circular bed of iron, size 15 by 22 inches, upon which are mounted hinged and sliding knives, and movable guides, with a lever, segment and rack. The knives, A, are secured to wings, which are hinged at the bottom to a movable



carriage, B, which slides in grooves in the bed, and is propelled by means of a toothed rack on its upper rear surface, engaging with the toothed segment on the lever, C. The cutters are, by set screws in the wings, so regulated as to prevent their drawing or crowding. Rests for holding the strips to be mitered at any angle are seen at F. It does a great variety of work.

Wood and Iron Working Machinery.

Gear's Patent Non-Shaking Balanced Jig Saw.



This cut gives a perfect illustration of our improved Jig Saw. By an arrangement in its construction, whenever the post is in the way in sawing long stuff, the position of the saw is changed instantly by turning the rods containing the saw around (see Fig. 2), besides being greatly improved in other ways.

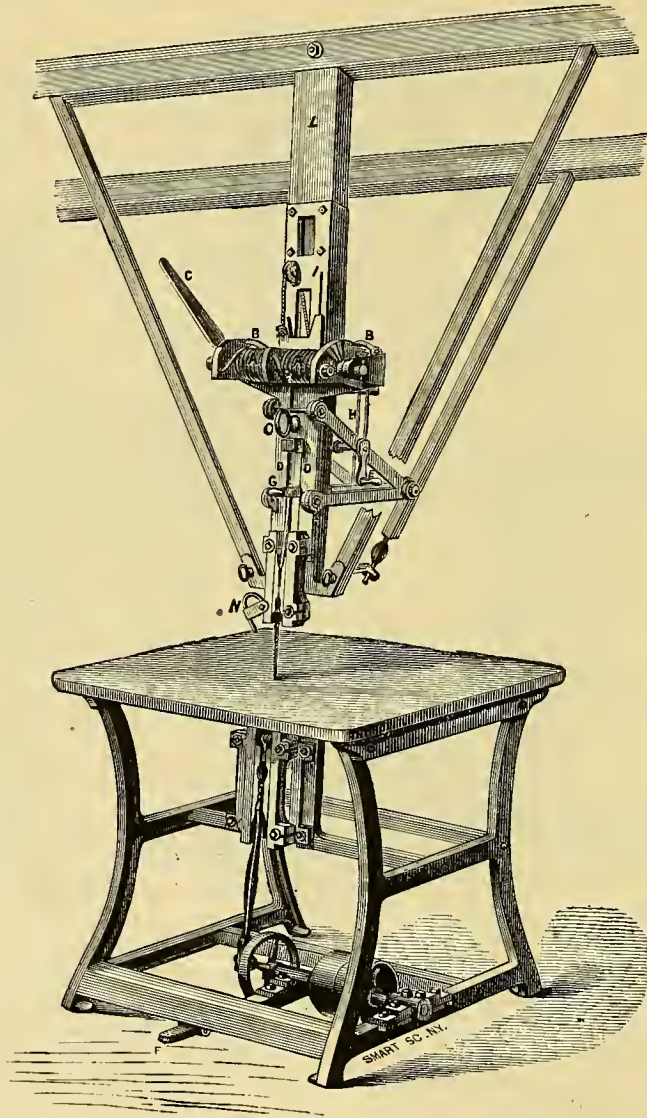
The following description of the machine will show that it is in every way first-class: It will be seen that the main working parts of the machine are two levers, A A, one connecting rod, B, pitman, E, connecting crank pin on balance wheel to bottom lever. At the other end of the levers are seen two steel rods, C C, that connect with two slides that run in boxes, I I; the saw is attached between the two boxes. The saw is strained or loosened in a simple manner, as seen in the engraving, by the screw and rod seen at the center of the upper part of the main frame. By turning it from right to left it raises the top lever. It requires one motion of the cam (handle of the cam) to move it in loosening or fastening the saw. In this way the saw may be taken out as many times as is desired and strained to the same tension each time without any care. Saws from 10 to 16 inches may be used in this machine, sawing 7 inches in thickness.

The advantages claimed for this saw over all others, are, *it does not shake* the floor it stands on, or the one over it. It takes one-third less room, and one-third less power; runs fast, is all clear on one side, there being but one post, which is out of the way from the saw and material operated upon. It will not shake because there is an equal amount of weight at each end of the levers. When one end jerks up the other end jerks down—exactly balancing—consequently it is non-shaking. All will readily see the advantage of getting rid of one fender post.

The advantages of our saw over those drawn up by springs and straps, can easily be estimated. We get a *uniform strain*, and as much *strain* as we please. Every saw is tested and warranted. The pulleys are 7 inches in diameter and should run about 500 turns per minute. Testimonials from parties using them will be sent on application.

Bear's Illustrated Catalogue of

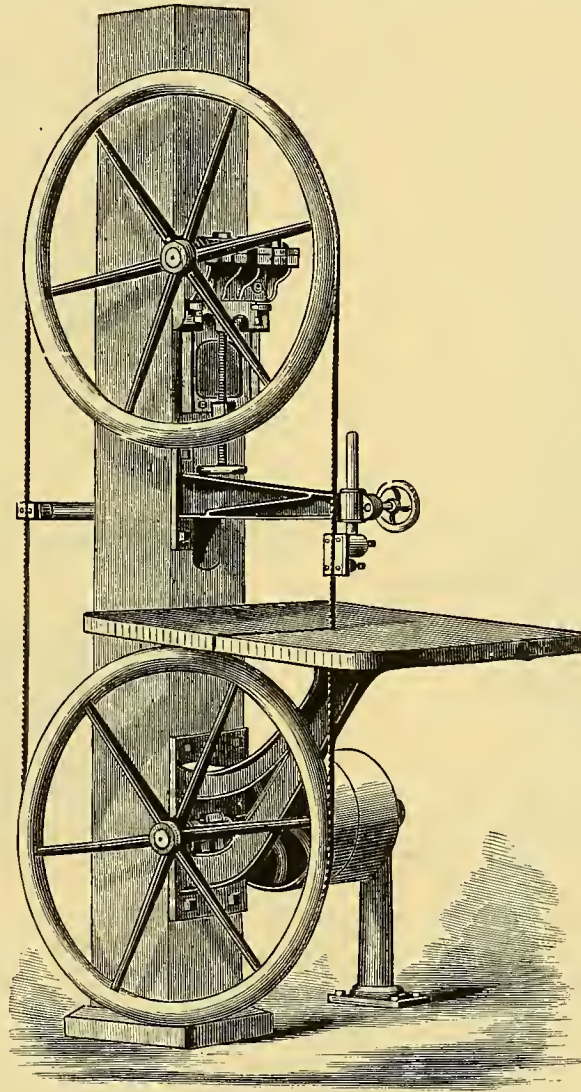
Spiral Spring Sawing Machine.



The above cut represents the machine set up in perfect order. A A are two spiral springs made from Jessup's best imported English steel. Each spring contains ten coils of $\frac{1}{2}$ or $\frac{3}{8}$ round steel rod, one being a right hand, the other a left hand coil. One end of each of these springs is firmly fastened to the ratchets, B B; the opposite ends to the front end of the lever, F, which is supported upon the shaft passing through the centre of the springs, and so constructed that there is no friction whatever upon any part of the springs when in motion. The link, H, which is of iron, connects the upper lever, F, with the lower lever, G. These levers are so connected, that when the saw is moving a five inch stroke, the first coils of the springs, A A, move but one-eighth of an inch, the second coils but one-ninth of an inch, and so on, down to nothing, making the average movement of the coils but one-sixteenth of an inch. The upper cross-head which carries the top of the saw is firmly connected to the lever, G, thus making a positive connection between the saw and springs. This insures a perfectly rigid strain on the saw. By means of the ratchets, B B, and lever, C, any amount of strain can be given, from ten to seventy-five pounds, according as it is a small or large saw. This is done by taking hold of the lever, C, which is inserted into the sides of the ratchets, B B, and thus winding or unwinding the springs, A A. Each spring and ratchet is independent of the other, so that you can use one or both springs. The tension on the saw by this means can be changed in a moment, while the machine is in motion. A plunger pump is attached to the inside of the iron plate, D D, with a rubber pipe running to the saw, and is worked by the motion of the lever, G. The two springs, with all their connections, are permanently fastened to the iron plate, D D, which is raised or lowered to suit any length of saw by means of the crank, E, and held in position by the thumb screw, O.

Wood & Iron Working Machinery.

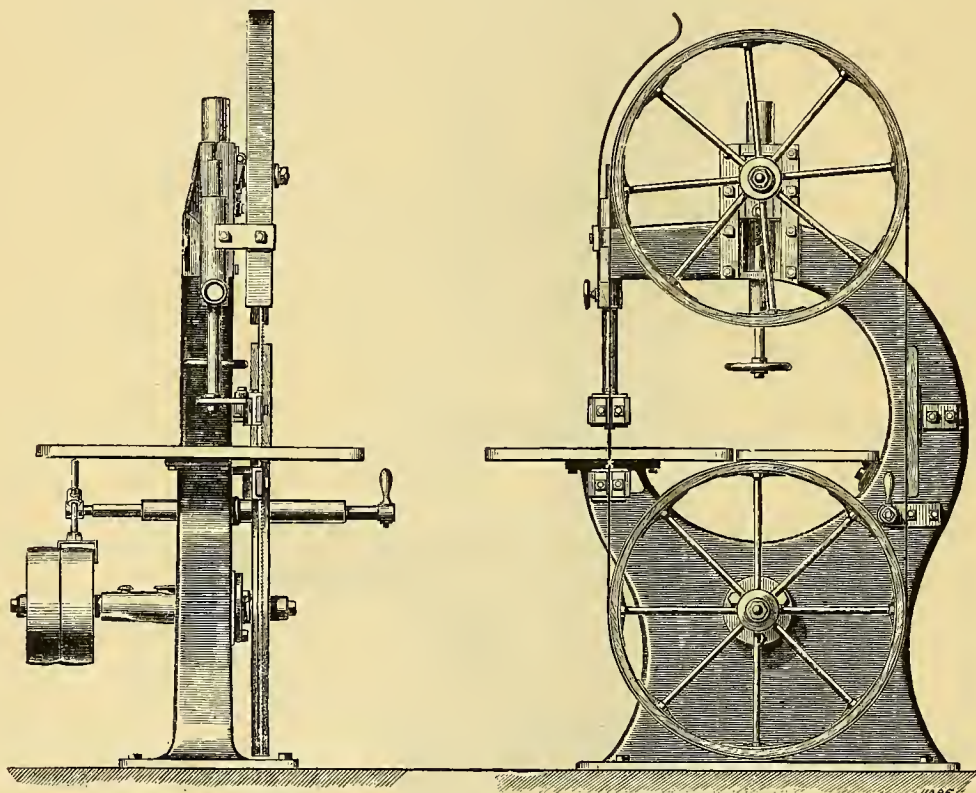
New Band Sawing Machine.



Wood Frame.

The above cut represents a new and improved Band Sawing Machine, which is selling at a much less price, considering its capacity, than any other in the market. This machine has been constructed with special reference to the wants of wheel and carriage manufacturers, and that class of customers who want a machine at a low price. It is capable of carrying saws from one-fourth inch to 2 inches wide. The saw pulleys are 44 inches in diameter; have wood rims, and are covered with leather. The post is of wood, 10 feet long, 11½ inches square, glued up. The table is 39 by 33 inches, 1½ inch thick, made of hard wood strips, 1½ inch wide, glued together, and can be elevated to an angle of 27 degrees. A slitting gauge and slide rest can be fitted to the table, if wanted, at an extra charge. Brazing and filing tools are furnished with the machine without extra charge. The tight and loose pulleys are 16 inches in diameter, 4 inch face, and should make 275 revolutions per minute.

Improved Band Sawing Machine.



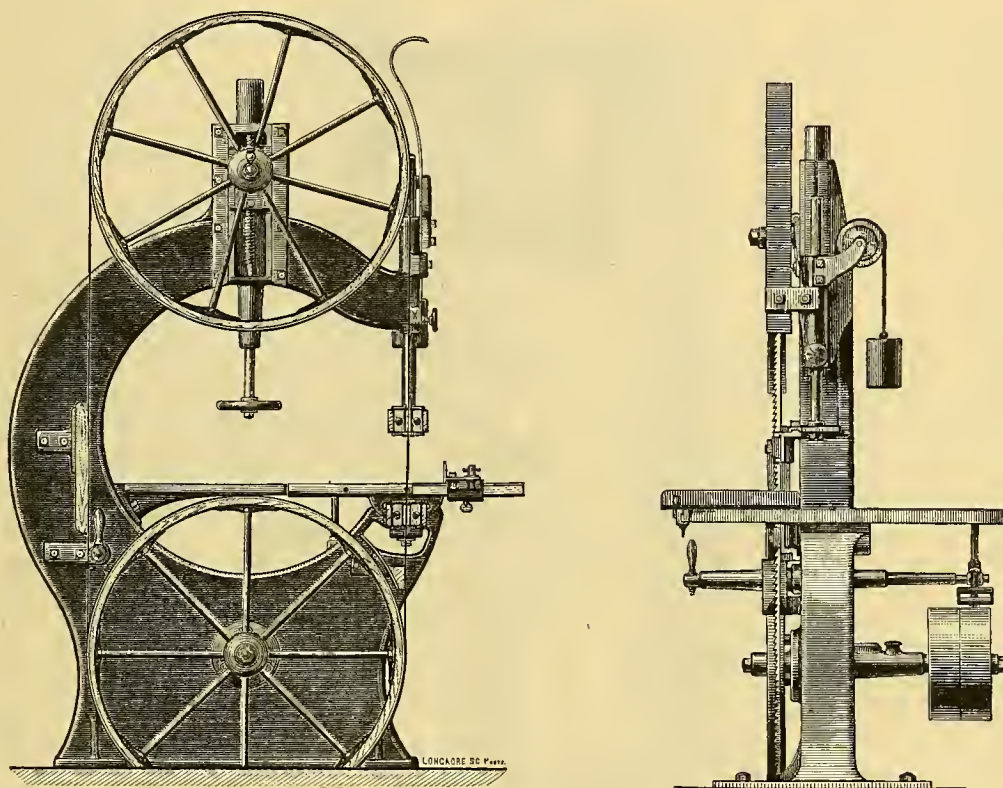
No. 1.

Richards, London & Kelley are the manufacturers of this machine. The frame is cast whole in one piece. The table is *fixed*, made of iron, and planed true. The wheels are thirty-six inches in diameter, of wrought iron, covered with wood and heavy harness leather. The shafts are of steel; the bearings throughout of hard brass. The guides are adjustable in all directions, and will require no repairs. The guide-stem is counter-weighted, to prevent accident from falling, and to secure convenience in adjustment. The top bearings have fibrous packing and thermatic oil cups. The wheels weigh but forty pounds each, are elastic, strong and safe from accident. The tension is compensating, and always equal, regardless of the temperature of the blade. The lower wheel is protected by a shield that guards against the cuttings getting under the saw blade. Each machine is furnished with one "Perin" saw blade, of any designated width, full set of wrenches, belt shifter, scarfing frame, wrought iron tongs, and silver solder for joining the blades. The base of the machine occupies but 21 by 42 inches on the floor. Weight of the machine, with details, 1,600 pounds.

We invite attention to these specifications as comprehending much that is wanting in other machines, and to the fact that while the machines cost a little more to the purchaser they cost a great deal more to build, and that the worth of a band saw depends upon its performance, and the number of blades required to keep it running. We also call attention to the patented improvements, the dates of which will be found cast on each machine.

Wood & Iron Working Machinery.

Improved Band Sawing Machine.

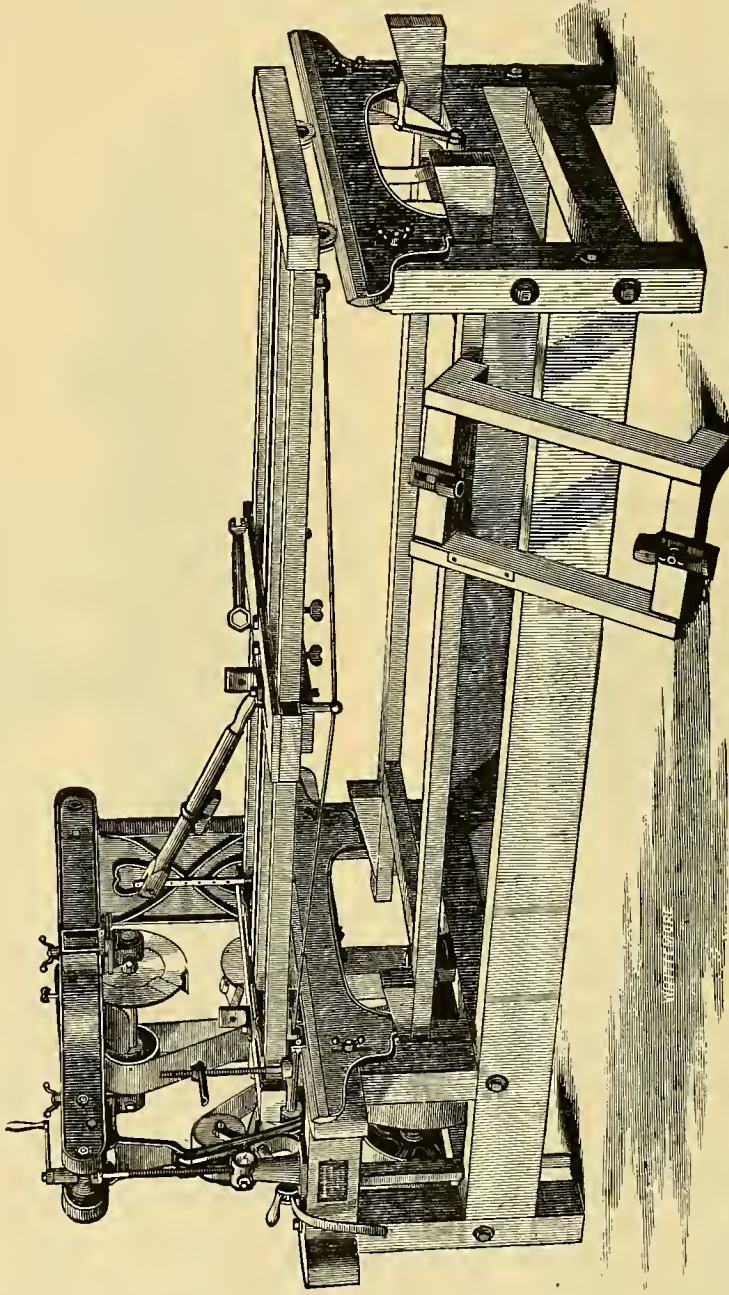


No. 2.

Richards, London & Kelley are the manufacturers of the machine represented by the above engravings. The cuts show the true front and side elevations of the medium size new style machine, from the designs of the manufacturers, which embrace many new and valuable improvements. The frames are cast in one piece, sufficiently heavy to prevent any deflection of the guides by straining the saw. The shafts are steel. The pulleys and wheels are fastened with steel splines. These machines have patent elastic wrought iron wheels, forty inches in diameter. The tension device is arranged with springs, to compensate for contraction and expansion of the blade. The top wheel is hung on a pivoted bearing, to regulate the path of the saw, and the back thrust against the guides. The table is of iron, planed true and pivoted for bevel sawing. It is fitted with improved patent guides, both above and below the table. Each machine is fitted with an adjustable gauge for slitting, which is pivoted so as to be set to the line of the blade. The guide stem is balanced, to prevent accident from falling, and to secure convenience in adjustment. Each machine is furnished with one "Perin" saw-blade, of any designated width, full set of wrenches, belt shifter, scarfing frame, wrought iron tongs, and silver solder for joining the blades. Weight of machine, 1,900 pounds.

We beg to add that we keep in stock a variety of sizes of "Perin" saw-blades, received direct from the exclusive importers, Messrs. Richards, London & Kelley, which are justly celebrated for evenness of temper, toughness, uniformity of thickness, high state of finish and great durability, and of the standard lengths and widths, joined, set and filed, ready for use.

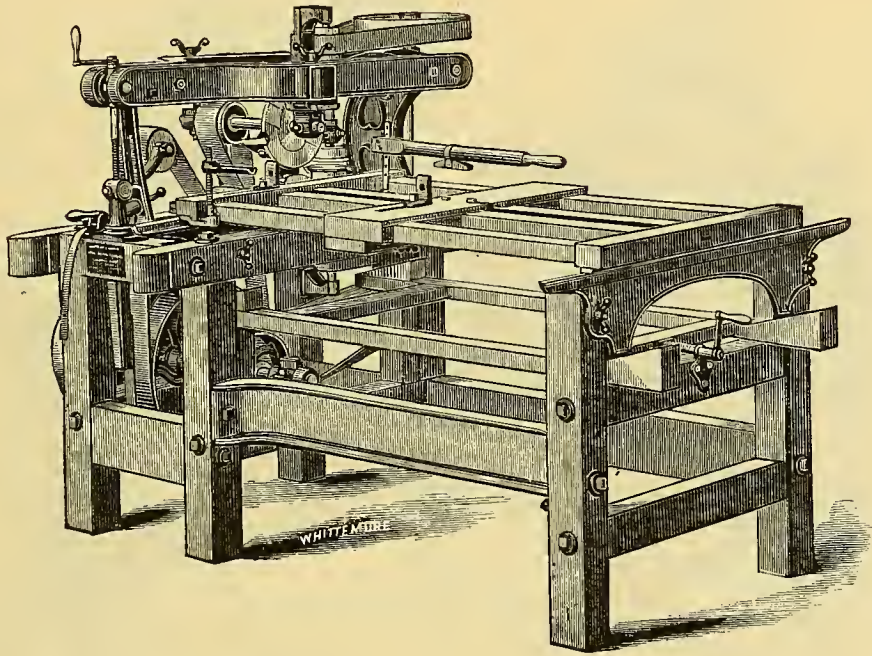
Patent Improved Large Car Tenoning Machine.



This is a new machine, constructed upon improved principles, to meet the wants of a class of customers who have long felt the need of a machine of this kind. The details have been carried out with great care, with two objects in view, viz.: To obtain the most perfect work, and the largest amount. It is recommended to car builders, railroad shops, and to all who do heavy work, with the most perfect confidence. There is a new improvement on this machine, consisting of a cutter head running on a vertical shaft for making a double tenon, not shown in the above cut. The machine has a heavy substantial iron top frame, the form of which is such as to give the operator a full view of his work at all times. The heads are twelve inches in diameter, and will work twelve inch timber. The cutter head shafts are steel, running in center boxes. The top cutter head is hung in a cross frame or yoke in such a manner as to give it a double adjustment. The head can be adjusted in the boxes, and the cross frame or yoke, with the head secured in its place, can be adjusted to suit the work being done, simply by turning a small hand wheel and screw. The stock used in the construction of this machine is of the very best quality throughout, and the style and quality of finish is claimed to be superior to any other machine in the market. The tight and loose pulleys are twelve inches in diameter, five inch face, and should make 500 revolutions per minute.

Wood and Iron Working Machinery.

Patent Improved Tenoning Machine.

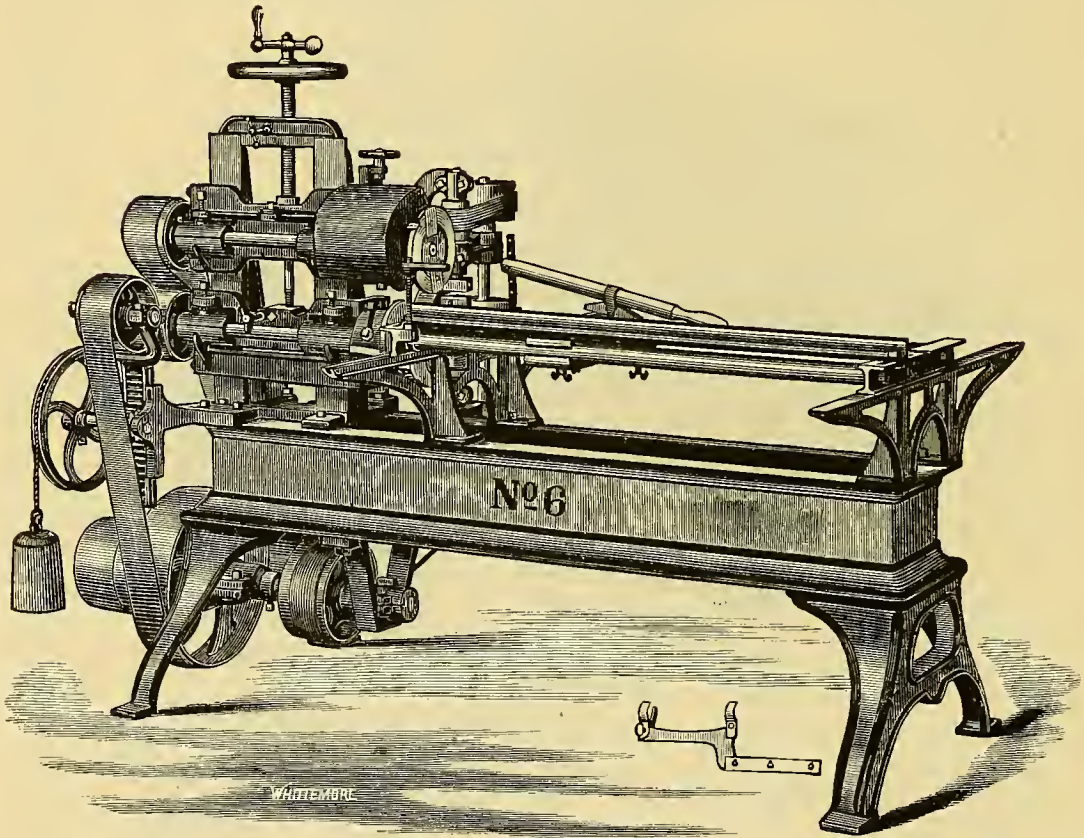


Medium Size, for Sash and Door Work.

This machine has an iron top frame, the form of which is such as to give the operator a full view of his work at all times. The cutter head shafts run in center boxes. The top cutter head is hung in a cross frame or yoke in such a manner as to give it a double adjustment. The head can be adjusted in the boxes, and the cross frame or yoke with the head secured in its place, can be adjusted to suit the work being done simply by turning a small hand wheel and screw. It has an iron bow girt in front (see cut), which affords a much easier position for the operator while at work. The stock used in the construction of this machine is of the very best quality throughout. The latest improvements are as follows: The raising wedges are faced with steel, which preserves an even surface and works much easier. The head-rail on the carriage is also plated with iron, which prevents its being jammed or worn out of shape. As now made the machine will work tenons six inches long, and any width which can be held on the carriage. The tight and loose pulleys are twelve inches in diameter, four inch face, and should make 500 revolutions per minute. A new style of belt tightener is now being applied to this machine.

Gear's Illustrated Catalogue of

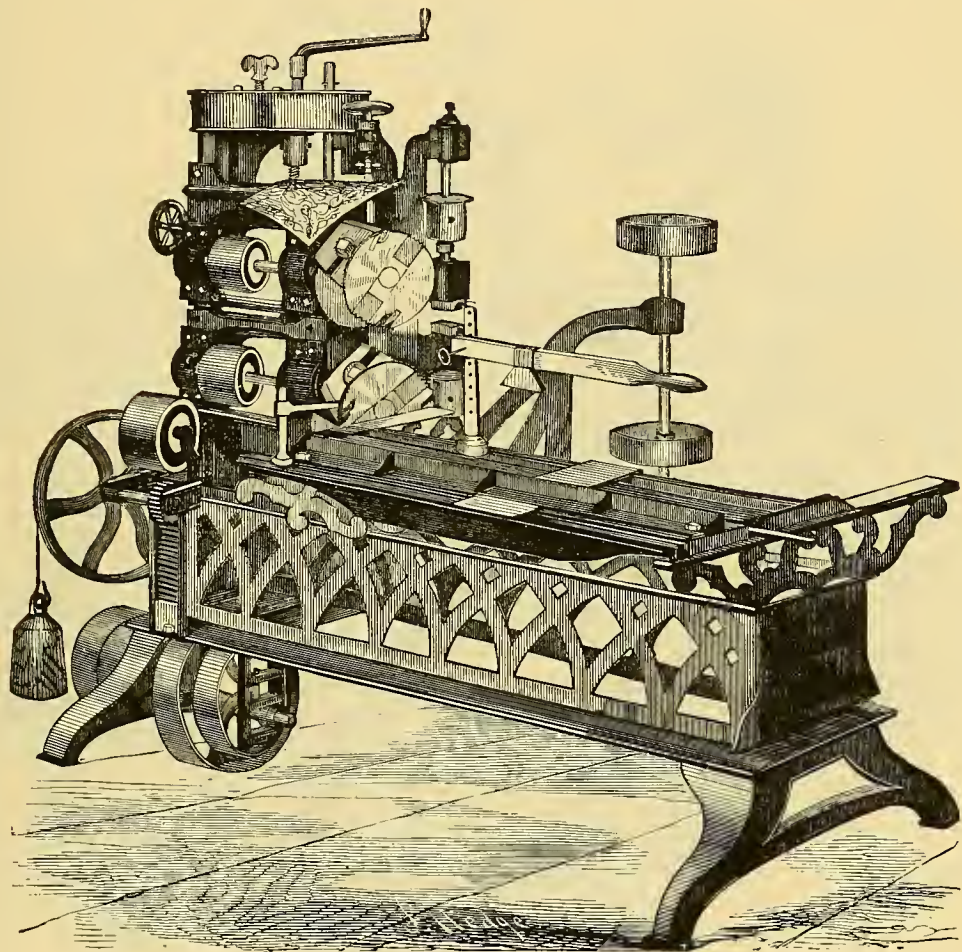
Patent Iron Frame Tenoning Machine.



No. 6. Common Size, with Single Heads.

This machine has Single Cutter Heads, overhung, and is intended for sash, blind and door, cabinet, carriage, or other work, cutting a three inch tenon. It has the Patent Adjusting Screw arrangement for the Cutter Heads and Cope Heads, by which all may be adjusted together or separately, as desired. It also has the self-adjusting belt tightener. The heads run on steel shafts in self-oiling boxes. The carriage is made very light, and works easily. It is a convenient and quickly adjusted machine. The machines are fitted with copes, or without, as desired. An apparatus for setting the cutters is furnished with each machine. The tight and loose pulleys are $8\frac{1}{2}$ inches in diameter, $3\frac{1}{2}$ inch face, and should make 600 revolutions per minute. Weight of machine, with copes, not boxed, 850 pounds. Power required to drive common tenoner, two horse power. All the internal belts for the machine are furnished. The main driving belt should be $3\frac{1}{4}$ inches in width.

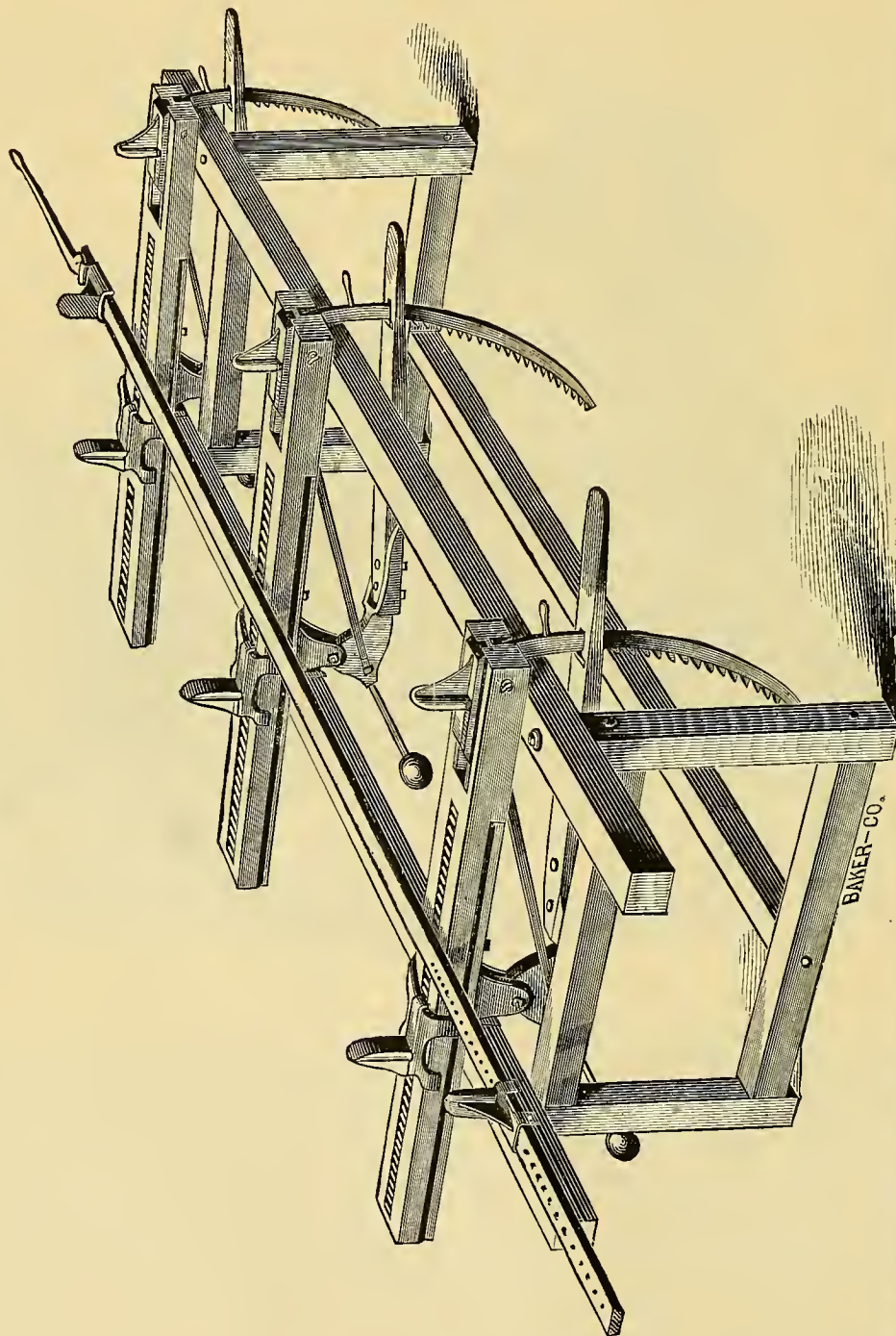
Patent Tenoning Machine.



No. 2.

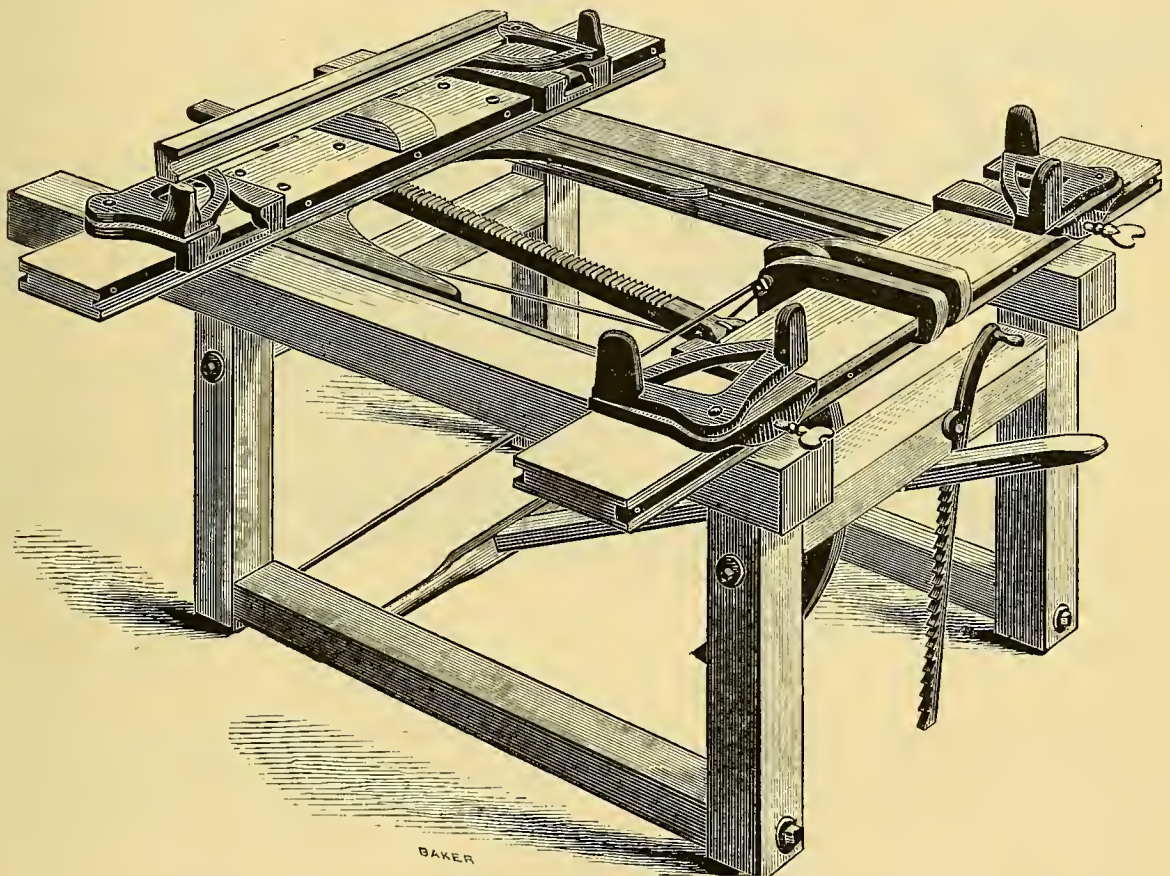
This machine is built of iron and steel, and is simple, firm and durable. Both cutter heads raise and lower by a screw to each, operated by a crank, with a patented device, by which both heads are raised and lowered together, without altering the thickness of the tenon. Each cope is attached to each head stock, in which each cutter head shaft hangs, so that the copes raise and lower with the cutter heads, and need no separate setting. Thus it will be seen how quickly the machine may be set for different thicknesses of tenons—simply by turning screws. Each cutter head shaft has a peculiar arrangement which prevents ALL VIBRATIONS ENDWISE, and both run in long Babbitted bearings. The cope shafts are arranged in the same manner. A single screw slides the top cutter head over the other, so as to cut one shoulder of tenons longer than the other when desired. The copes move out and in or up and down with single screws. Saws are used in cutter heads instead of “spurs,” and seldom need sharpening, and are more easily kept in order. The shape of the cutters is such that they cut very easily, and are easy to grind. They are also very convenient to get at on the machine. The belt which drives the cutter head shafts, when once laced together, NEVER NEEDS ANY ALTERATION, as a binding pulley operates against the laced side of it, operated by a weight and pulley, so as always to keep the belt tight, and always to be SELF-ADJUSTING, and as the belt covers nearly the whole surface of the pulleys, the speed of the cutter heads cannot be checked while doing any kind of work ever required. The frame of the machine being narrow, is not in the way of the workman.

Door and Blind Clamp.



The above cut represents one of the best and cheapest machines for the purposes designed, doing the work perfectly and rapidly, clamping doors on ends as well as sides. The cut explains the machine, working simply by pressing down three levers with the foot, and moving the eccentric by hand. The change from one size down to another is easily made by moving the back dog either backward or forward. Will clamp doors 10 feet long by 4 feet wide, down to the smallest size. Will clamp blinds and sash, but is only intended for long sash or odd sizes.

Patent Sash Clamp.



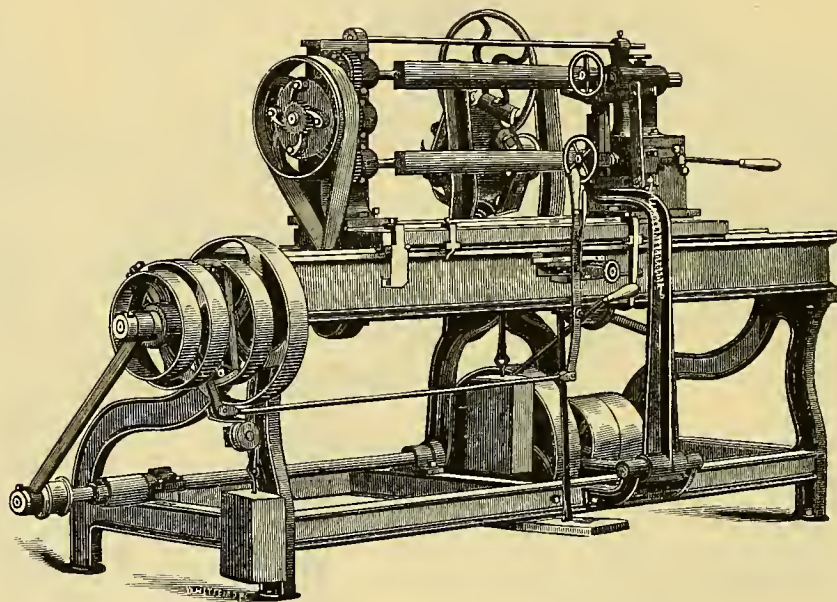
This is one of the best and cheapest machines for the purpose in use, and by its use a great amount of labor is saved over other methods of clamping sash. It not only brings up every joint to its place, but makes the sash perfectly square, clamping the four sides all at one operation, the operator simply pressing the lever down with his foot. It clamps all sizes, from 7 by 9 glass, to 4 feet by 4½ feet sash, and brings the work square every time. Either pins or wedges can be used.

Directions for Use.

In adjusting the corners, place them at equal distances from the center, on the front part of the machine, so that when the sash is pressed up the inner arm will be on a line with the bar. Then place the corners on the movable bar the same distance apart, and in such a manner as to bring the sash square, adjusting the connecting rods to give the necessary pressure.

Gear's Illustrated Catalogue of

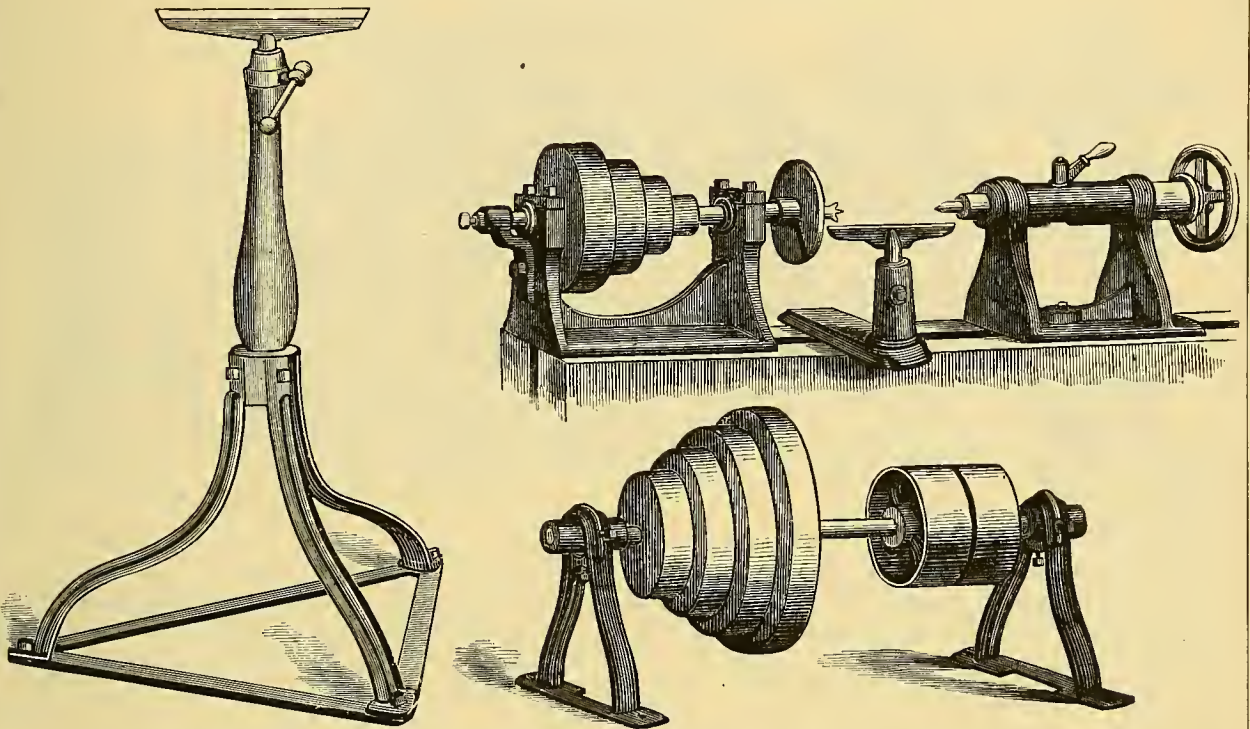
Improved Lathe for Turning Irregular Forms.



This machine has several useful improvements. It is constructed entirely of iron and steel, with journal boxes lined with anti-friction metal, and is very substantial and durable. It will turn all kinds of carriage spokes, axe, pick and hammer handles, and other irregular forms, and will turn different sizes from the same pattern, by simply adjusting the guide wheel boxes and the spoke supporters. Different grades of feed are obtained by the cone pulleys on the left. By means of these pulleys and the automatic shipping arrangement, a spoke is turned much faster until it approaches the square part, when the middle dog, on the front of the carriage, comes in contact with the trip lever on the front of the bed, then the shipper is relieved, and the weight at the left changes the clutch from the small cone to the large one, causing a slower speed the rest of the way. When the work being done will allow, it may be run throughout with the quickest speed, and when the form of the work requires, it may be run slow throughout. When the work is done, the dog on the left corner of the carriage, combined with other devices, throws the cutter head away from the work, making it safe for the operator to change the spoke. The same dog stops the carriage. To run the carriage back, the shipper handle at the bottom of the bed must be carried to the right, and when the carriage gets back, the dog on the right corner comes in contact with the shipper and stops the carriage. This machine has an improved support for the stock being turned. When the stock is in the machine, the cutter head is brought to the work by the foot lever in front, near the floor, and round handle in front of the bed. This must be drawn tight enough to produce the necessary pressure on the pattern. The carriage is started by carrying the upright shipper lever to the right, which is held in that position by the trip lever until the trip dog comes in contact with it, when the speed is changed as above described. This machine will turn large spokes at the rate of one inch per second, and very smooth. Small ones can be run much faster.

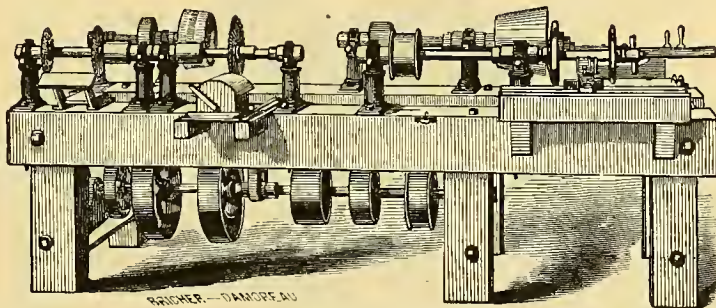
Wood and Iron Working Machinery.

Pattern Maker's Lathe.



The above cuts represent a Pattern Maker's Lathe, with reversed cone, to give ample room for the operator when turning near the center; also, a Floor Rest, which can be readily adjusted to the work required. They are fitted up with great care and precision. Lathes are generally called for, and prices are given, without ways or shears. These can be furnished to order either of wood or iron. Each lathe consists of head and tail stock, with rest, stand, counter shaft, cone and hangers complete. The Pattern Maker's Lathe will be furnished with a rear end face plate, for turning large diameters. It has a common face plate, one back, one long, medium and short rest, and one pair each of screw, spur, female and round centres.

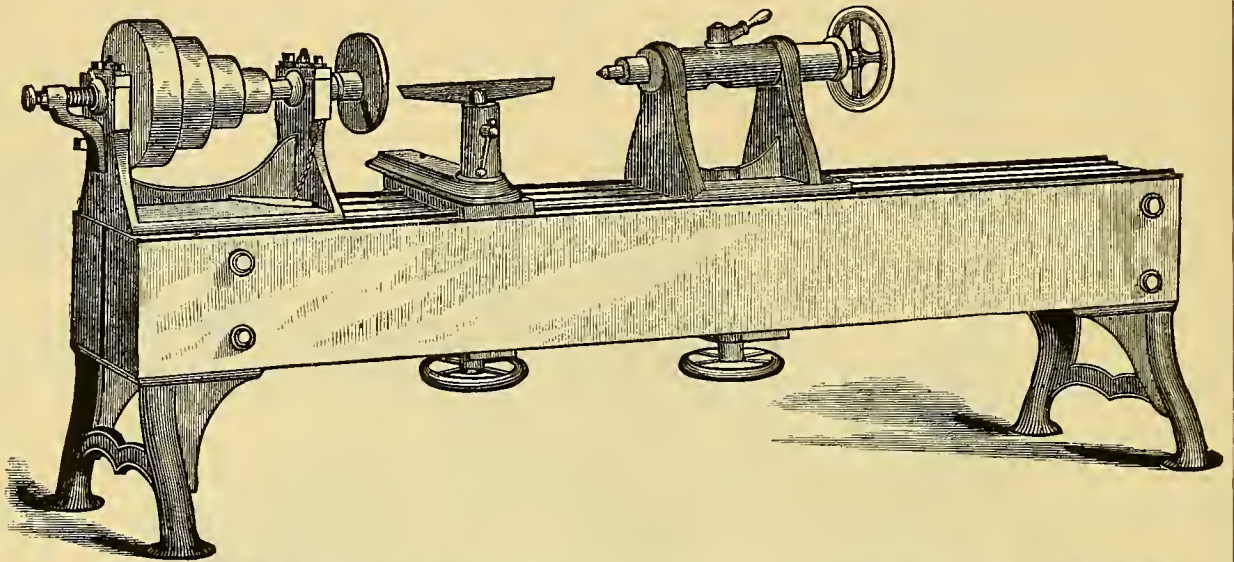
Pail Lathe.



These lathes are all made with pivot boxes, iron pulleys, cast steel saw arbors, and improved inside turning carriage. Each machine is furnished with a full set of saws and chisels all ready for use. There are other sizes made for kit lathes; also, for tubs of all sizes.

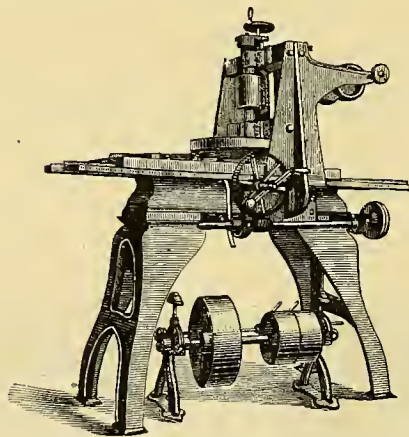
Gear's Illustrated Catalogue of

Common Wood Turning Lathe.



These lathes have cast steel spindles, two face-plates, three rests, a spur, female and round centres, the necessary bolts for head-blocks, and rest-holder. The counter shaft has improved hangers, patent self-oiling boxes and cone pulleys. The tight and loose pulleys vary according to the size of the machine. The ways or beams are furnished at an extra charge, according to their size and length. There are seven sizes of this machine, viz.: 10, 12, 14, 16, 18, 20 and 24 inch swing lathe, with counter shaft, etc., complete.

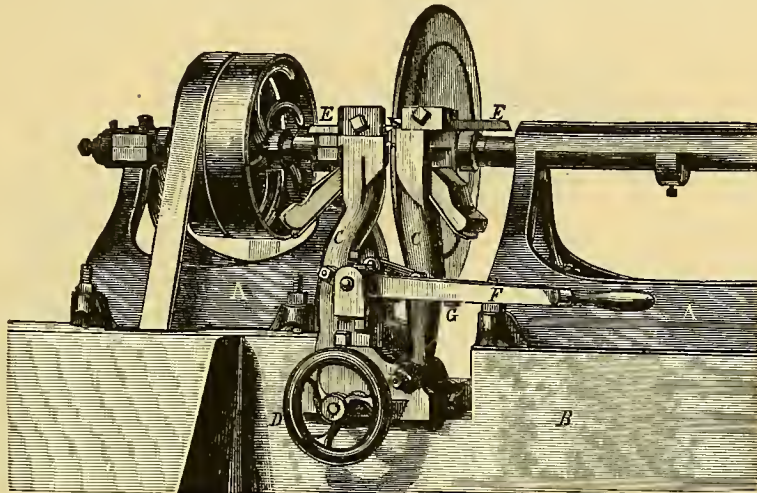
Wood Planers for Electrotypers.



This machine is designed for dressing wood for mounting Electrotypers' and Stereotypers' plates. The machine is all metal and is very substantially made, and has both hand and power feed. The spindle and cutter head is similar to the Daniels planer in its operation. The head that carries the cutters is a round flanged disc, and operates without noise or blowing. The spindle has a collar and step on the top end to prevent friction and grinding, as is the case in fast running spindles that have shoulders on both the upper and lower boxes. The sliding table is double; the lower one has guides planed to fit the bed, and the top one takes the spur jaws that hold the work. The two are held together with dowel screws, and can be leveled perfectly by liners between the bed-plates. In setting up this machine care should be taken to have an equal bearing on all the feet; also, to see that the table bears equally solid on all the four corners, which can be easily determined by blows with a wooden mallet over the bearing parts. When found correct, secure the feet firmly to the floor. It is important to have cutters that are to be used together each of exactly the same weight as its mate.

Wood & Iron Working Machinery.

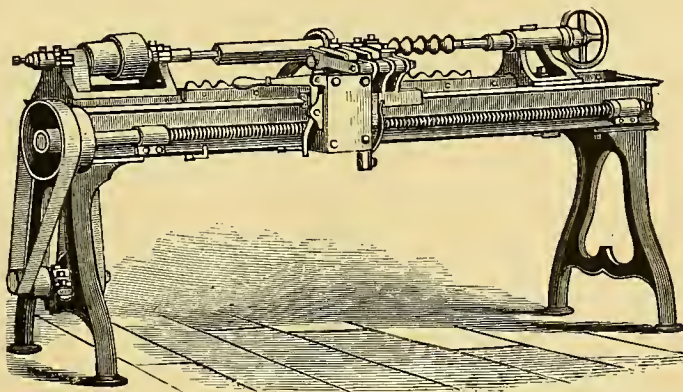
Improved Turning Lathe,



For Turning Heads of Casks, Kegs, Bottoms of Tubs, Pails, &c.

The following is a description of the machine above represented, and its operation. There are two heads or stocks, A, similar to those of an ordinary lathe, mounted upon shears, or a frame, B, one spindle—the live one,—having a fast and loose pulley, and the other—the dead spindle,—sliding back and forth by means of a screw and hand-wheel (not shown in the cut) in the ordinary manner. To the live spindle is secured a circular flange or head, which rotates with the spindle. There is a duplicate head attached to the dead spindle, but turning upon it as a wheel upon its axle. To hold securely the stuff placed between them, their inner faces are provided with spurs. Secured to the bed of the lathe is a stand which supports two uprights, C, which are pivoted to a table, the lower part or base of which slides by a dovetailed slot in the stand, and can with its appurtenances be moved in or out by means of a screw and hand-wheel, D, in the same manner as the carriage on a lathe. Thus the apparatus can be adapted to the different sizes of work to be done. The uprights are pivoted at their lower ends to suitable stands on the table or carriage, and the other ends adapted for the reception of turning tools, E, held horizontally in place by means of set screws, as the tools of a turning lathe are held. Just below them, and set at an angle to chamfer the edge of the head properly, are two plane irons, secured in the usual manner. These cutters and planes are advanced to or recede from the work by a hand lever, F, and suitable links, shown plainly in the cut. The limit of their approach is determined by a set-screw, the head of which is seen under the lever at G, passing through one of the uprights and setting against the other.

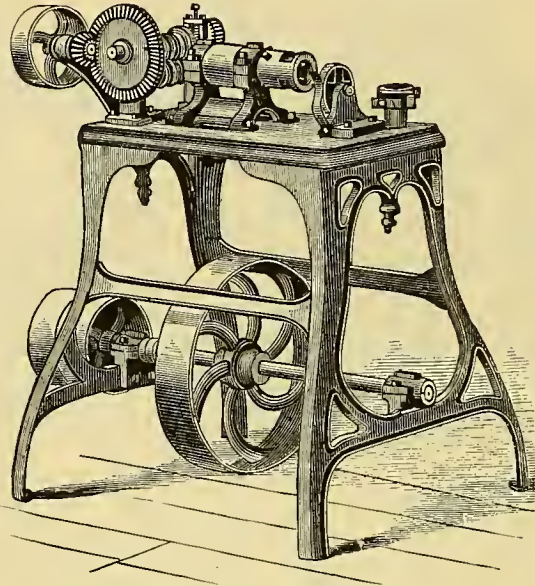
Furniture, or Gauge Lathe.



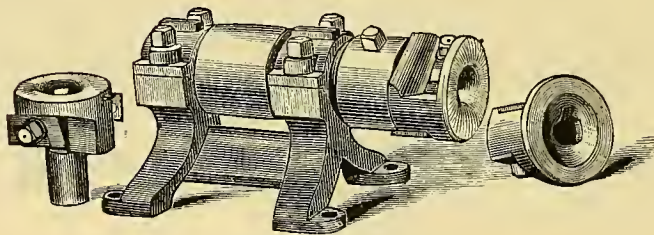
In ordering the lathe represented above, customers should be careful to describe the kind and style of work to be performed, for what would be the best for some, would be useless for others. The Gauge Lathe, with screw feed, like the above cut, is in very general use for chair stock, bedstead rolls, balusters, and various kinds of handles, cabinet and knarled work.

Gear's Illustrated Catalogue of

Patent Rod, Pin and Dowel Machines.



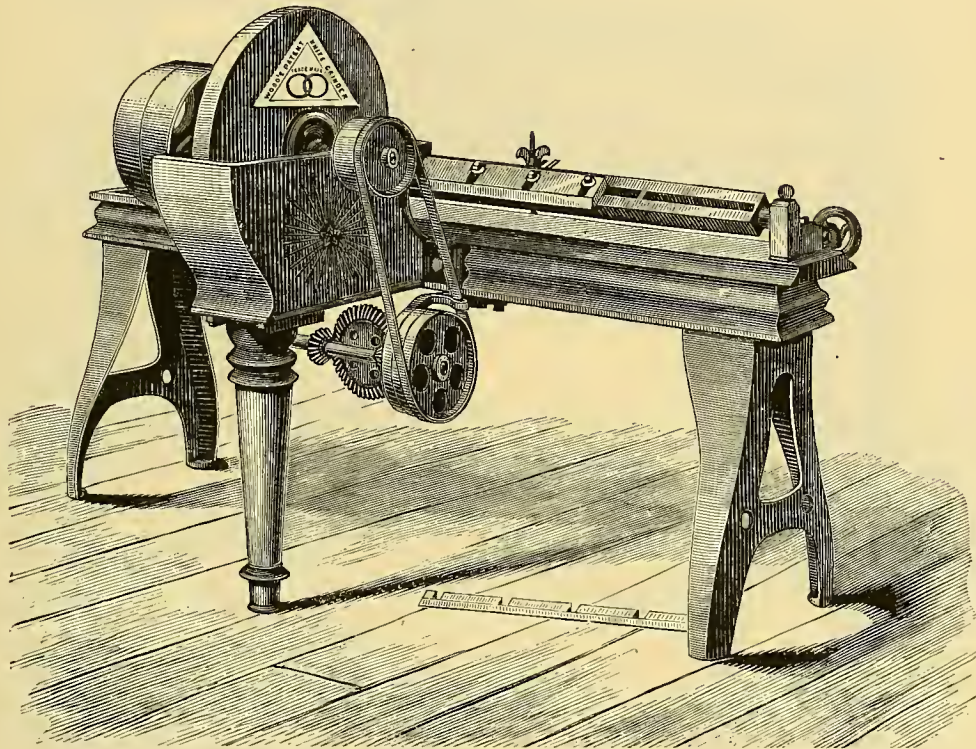
Power Feed.



Hand Feed.

These machines are all self-feeding, the cutters being arranged in the heads in such a manner as to feed the stick as fast as it can be worked, without any pushing by the operator. It will turn rods from $\frac{1}{4}$ to 3 inches in diameter, perfectly smooth and true, either of pine or hard wood. The working part of the machine has a hollow arbor, with head and cutters revolving around the rod. The working parts are the same for the hand and power machines, but the latter has a neat iron frame and table to support the arbor, with a set of rolls to take the rods out of the way after they leave the head, and also to hold them firmly in place while working, thus leaving the operator free to start the sticks and take care of them when finished. The rolls have grooves in them to fit the size of the rod, and hold it firmly, without denting or defacing it. The power machine also has a counter-shaft attached to the frame for running it. We send with the Power Machine any three heads that may be desired; also, rolls with three sizes of grooves, and with the hand machines the sizes given below, unless otherwise ordered. Each Hand Machine will work the largest size named for it, and all sizes smaller, but none larger. The No. 1 Power Feed Rod Machine, will work 2 inches, or under, and has three heads; No. 2 will work $1\frac{3}{4}$ inches, or under, and also has three heads. The No. 1 Hand Feed Rod Power Machine will work $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ inch, or under, and has three heads; No. 2 will work $\frac{3}{8}$, $\frac{7}{8}$ and 1 inch, or under, and also has three heads; No. 3 has three heads, and will work $1\frac{1}{8}$, $1\frac{1}{4}$ and $1\frac{3}{8}$ inch, or under; No. 4 has three heads, and will work $1\frac{3}{8}$, $1\frac{1}{2}$ and $1\frac{5}{8}$ inch, or under; No. 5 also has three heads, and will work $1\frac{3}{8}$, $1\frac{1}{2}$ and 2 inches, or under. The counter-shaft on the Power Machine has tight and loose pulleys $8\frac{1}{2}$ inches in diameter, $3\frac{1}{2}$ inch face, and should make 750 revolutions, giving the heads 3,000. Weight, boxed, 460 pounds.

Patent Automatic Knife-Grinder,

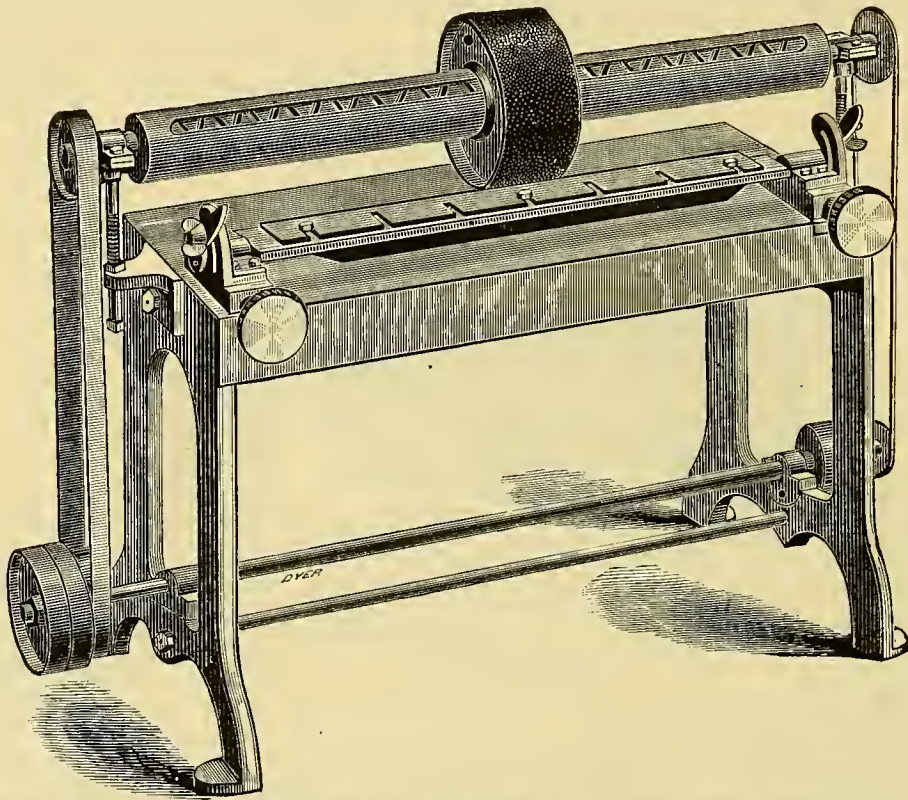


For Sharpening Planer, Tobacco, Paper Cutting and other Knives.

This machine is admirably adapted to sharpening planing-machine and other long knives with chisel edges. The grinding is done dry with this grinder-wheel. It has been in use for some time with complete success, grinding the long splitting knives used by carriers without heating or drawing the temper, and giving a perfectly true bevel and straight edge. The machine requires very little attention. The knife is ground, after it is placed in proper position, entirely by the action of the machine, with greater accuracy and better than it is possible to do with a grindstone or by hand, and in much less time. The principle of the feed-gear is the same as that used on metal planers, and by means of adjustable pins, the carriage can be made to traverse and return in from three to thirty-six inches, according to the length of the knife being ground. It is a very simple machine and in no way liable to get out of order, and the accuracy with which it does its work must commend it to the most critical mechanic. The grinding-wheel is solid, and will last for years in an ordinary planing-mill, without covering, sprinkling or renewal of any kind whatever. The machine is equally adapted to grinding paper and tobacco cutting knives, and shears or knives generally requiring a true bevel or straight edge, to thirty-six inches in length. Two or more knives, making in length not over thirty-six inches, can be ground at the same time. In this way a number of plane irons, chisels, etc., can be attached, and all ground at once, making an important saving in time. No counter-shaft is necessary. The machine has a tight and loose pulley, six inches in diameter, and three inch face, which should be driven from one hundred and seventy-five to two hundred and fifty revolutions per minute. There are three sizes of this machine, viz.: One grinding thirty-six inches, another fifty inches, and another eighty inches in length. The small machine stands on a pedestal, which is bolted to the floor.

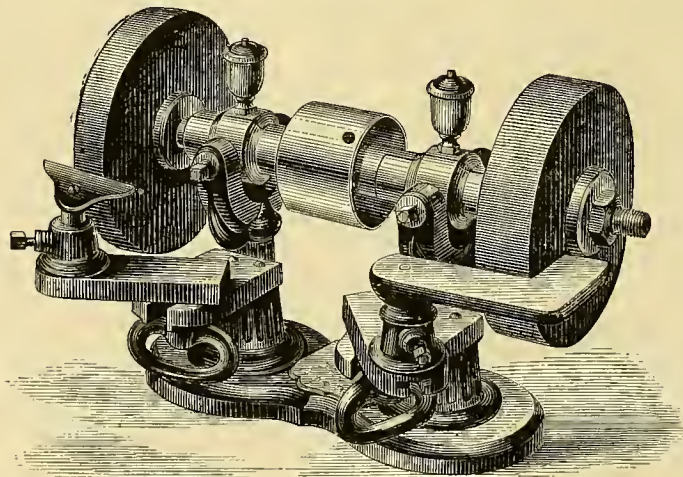
Dyer's Illustrated Catalogue of

Planer Knife and Tool Grinder.



The above machine should be belted as the pulleys are arranged. The belts are all open,—that is, they are all driven one way. As you stand in front of the machine the grinder runs toward you, or from the edge. The speed recommended to run the grinder is about 750 turns per minute. The knife, when bolted on to the rest, should be set just as you wish the scarf or bevel to be, then feed up very lightly by the adjusting screws. You will find that it will then grind very fast and leave a concave bevel and a perfectly straight and sharp edge.

Emery Grinder No. 0.

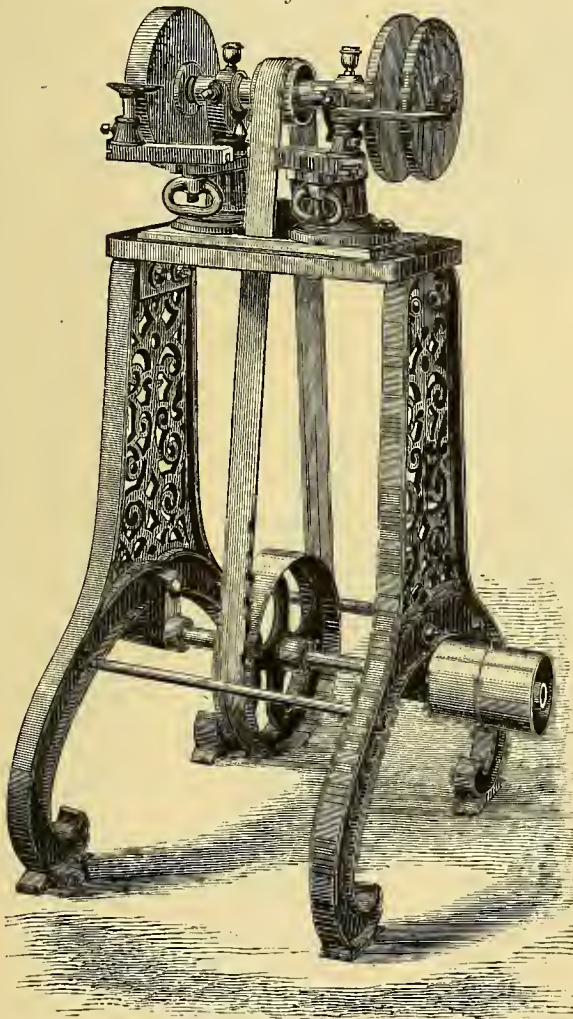


This Grinder has a $1\frac{1}{2}$ inch steel mandrel, for wheels with $\frac{3}{4}$ inch mandrel hole. It will run two wheels at the same time, from 8 to 10 inches in diameter, $\frac{1}{4}$ to $2\frac{1}{2}$ inch face. The No. 1 Grinder is made in the same style as the No. 0, for wheels with 1 inch mandrel hole.

Wood & Iron Working Machinery.

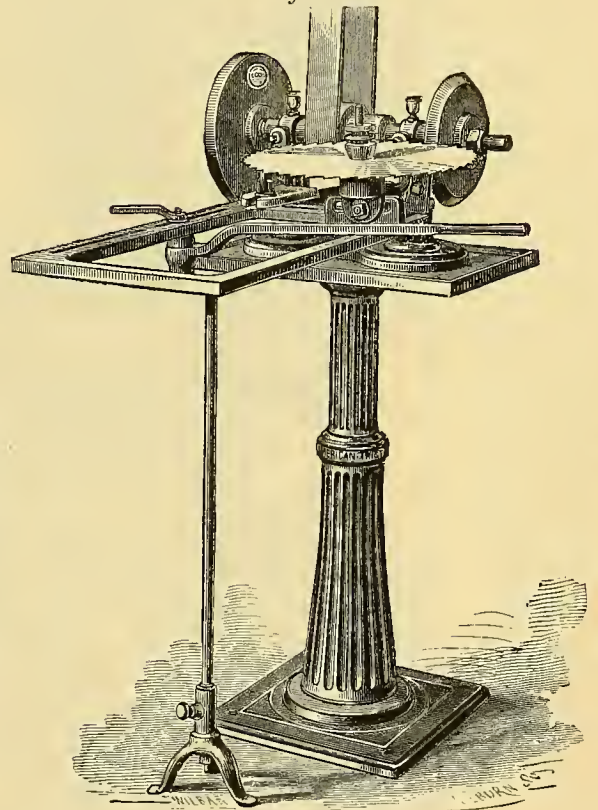
Emery Grinders.

Fig. 1.



New Style Frame for Nos. 0 and 1 Emery Grinders.

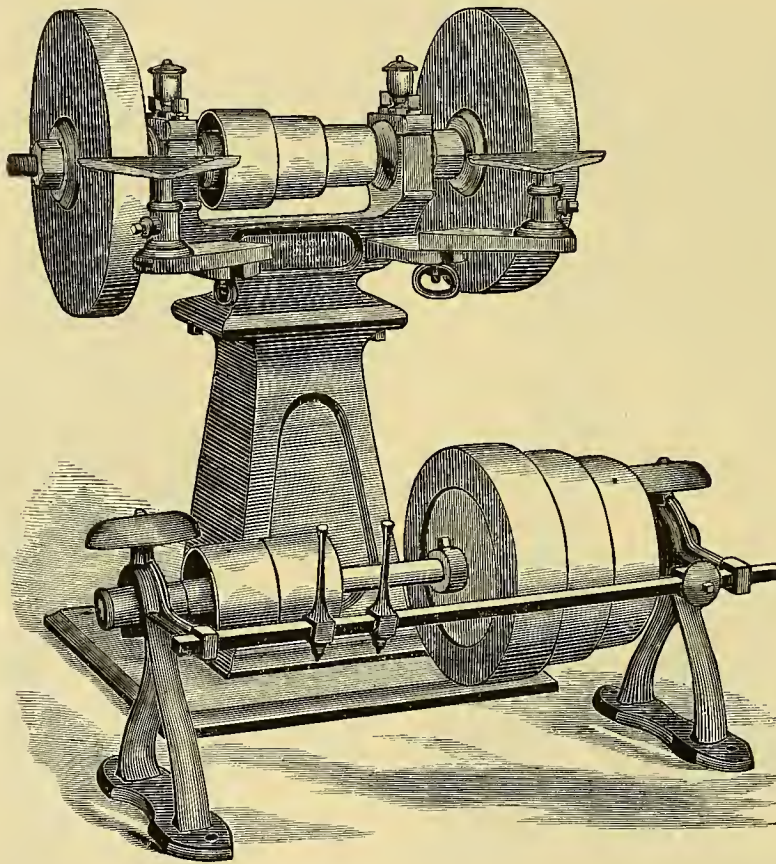
Fig. 2.



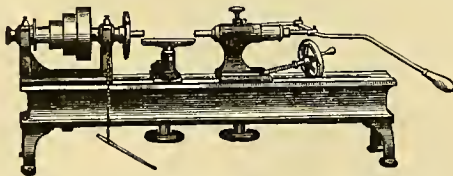
No. 1 Emery Grinder, with Saw Gummer Attachment.

Figure 1 represents a new style frame for No. 0 and 1 Emery Grinders, with counter-shaft and pulleys all complete. Figure 2 represents a Grinder with an attachment for grinding the teeth of circular saws, from the smallest to four feet in diameter, true and uniform. The saving of time and files will in a short time pay for the machine for sharpening saws alone, while it can be used for grinding tools, polishing metals, and a variety of work that otherwise would have to be done with a lathe, planer, or a vise.

Emery Grinder No. 3.



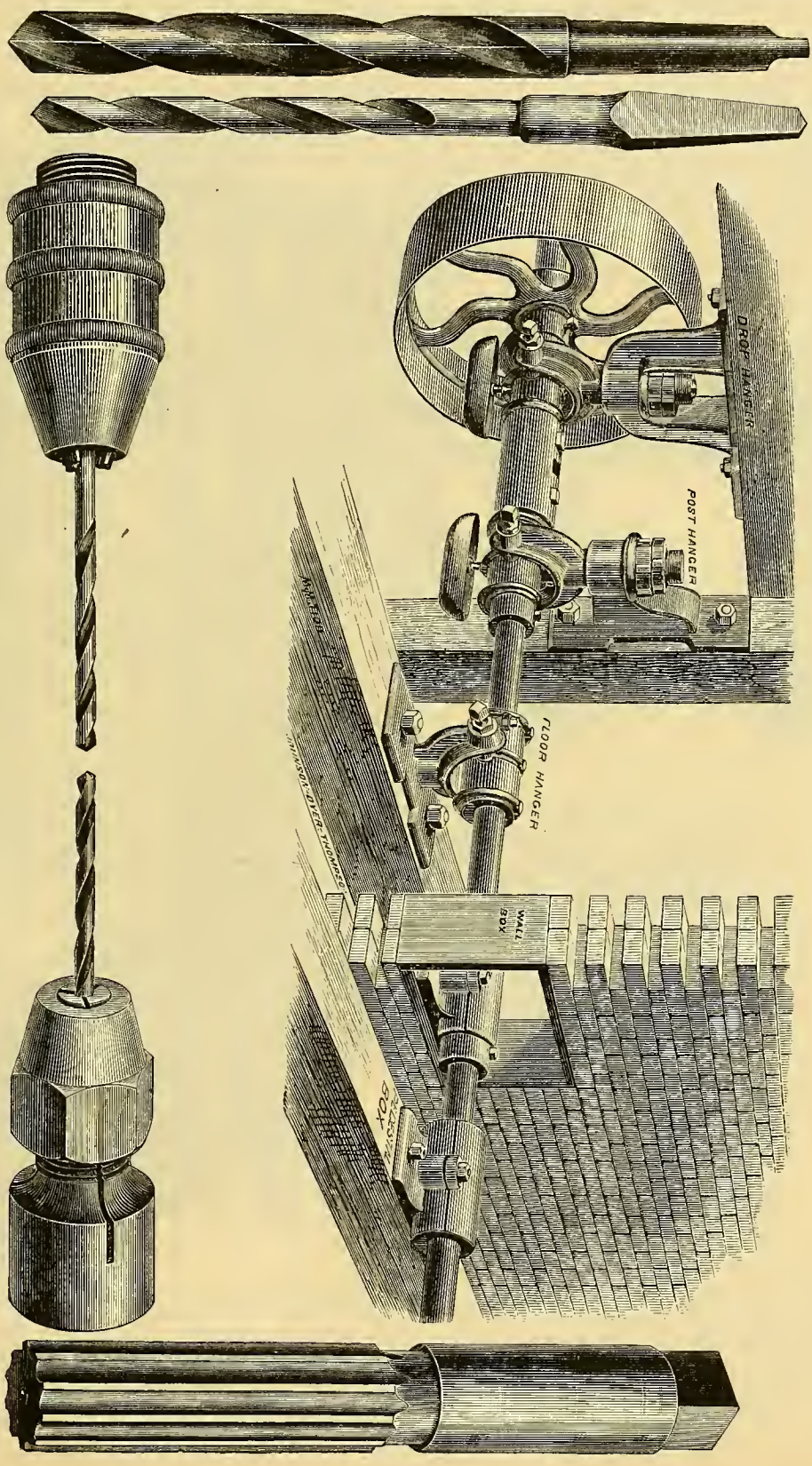
This grinder has a one and five-eighths steel mandrel (for wheels with one and one-half mandrel hole), and will run wheels to thirty-six inches diameter, and is designed for heavy work.



These cuts represent a bench lathe, with a counter shaft, three foot bed and nine inch swing, with a lever for light drilling, &c.

Wood and Iron Working Machinery.

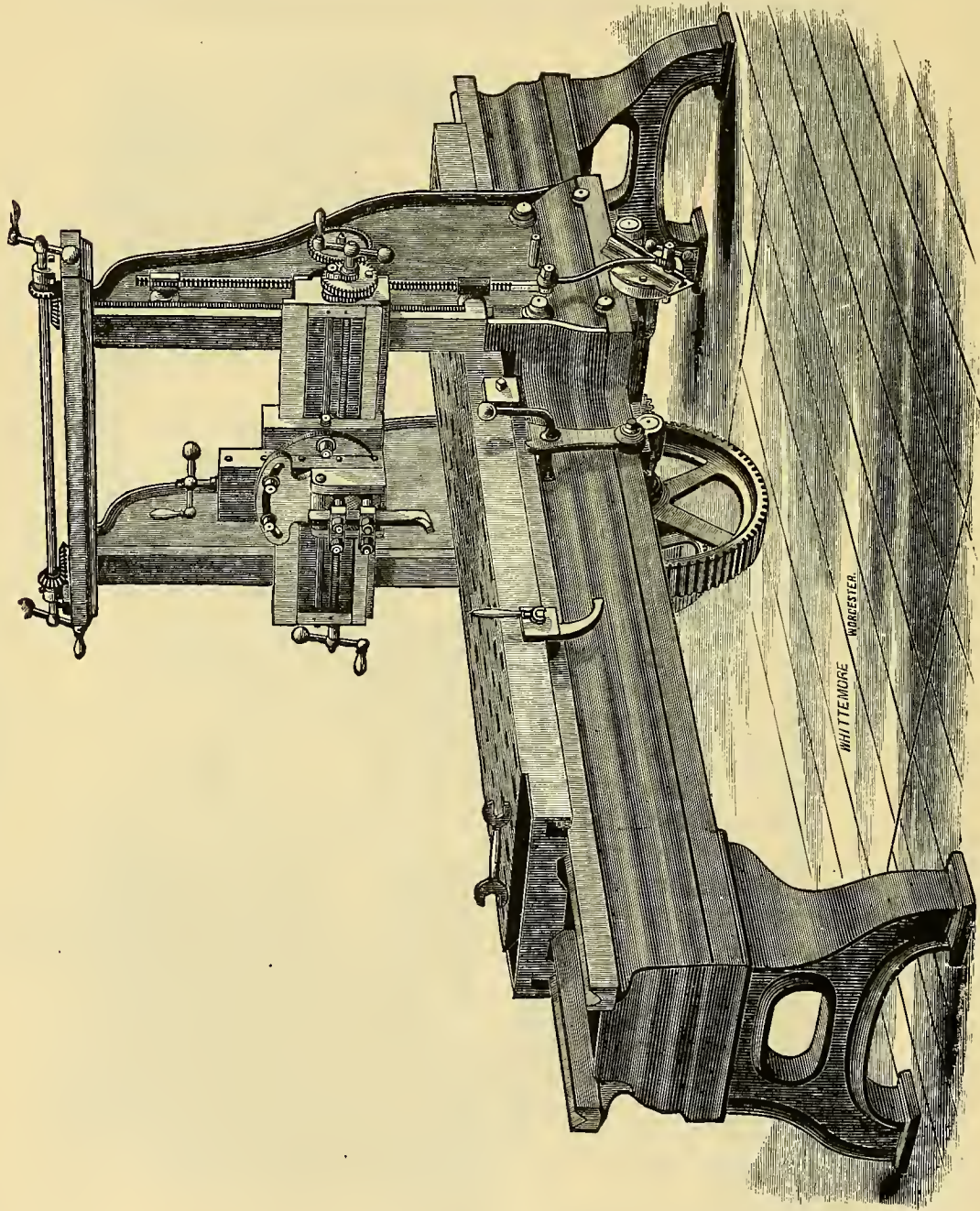
Shafting, Hangers and Pulleys.



Chucks, Drills and Reamer.

Gear's Illustrated Catalogue of

Large Iron Planer.



Wood & Iron Working Machinery.

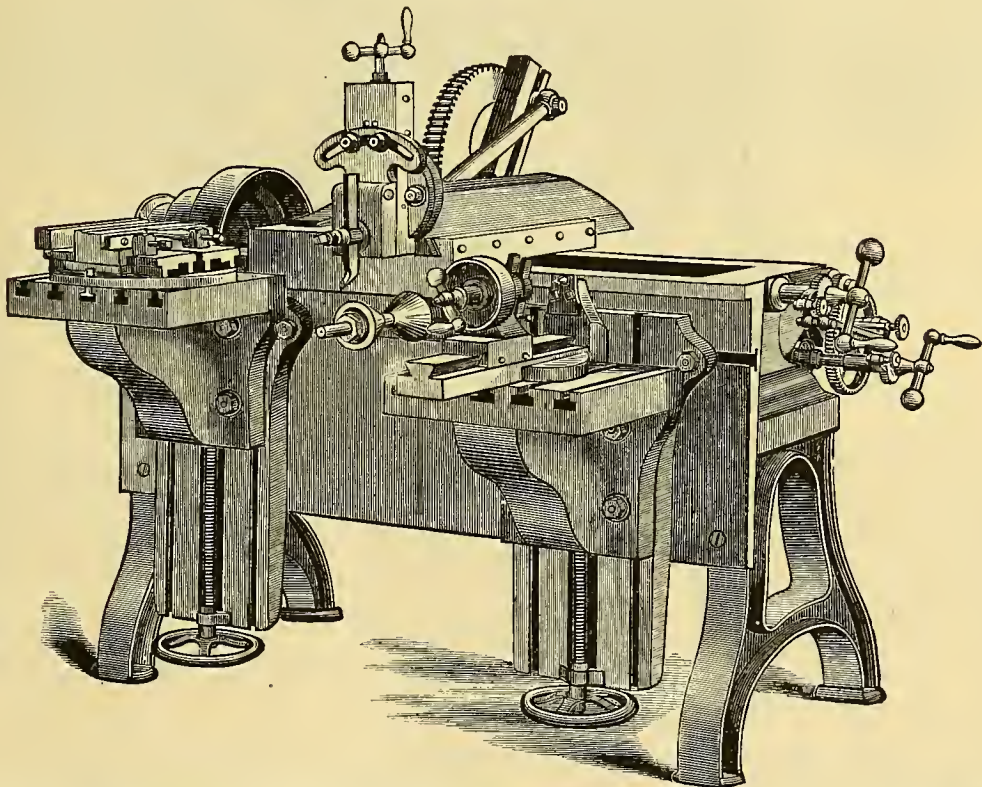
Large Iron Planer.

SEE ILLUSTRATION ON PAGE 86.

The cut on page 86 represents an iron planer which will plane 26 inches wide, 24 inches high, and 6 feet long. It also represents the style of the larger sizes. These planers are made from new patterns, extra heavy, and especial care has been observed so to proportion the parts as to secure the greatest strength of metal and durability of the machine. All are furnished with down, cross and angular feed in the head, and if desired can be furnished with an attachment for feeding the cross beam down. The thirty-six inch and larger sizes are furnished with an improved power attachment for raising and lowering the cross beam. All the gears and racks are cut. All the handles and balances are made of wrought iron. All sizes are furnished with wrenches, counter-shaft, with patent self-lubricating pulleys and boxes. The following are the different sizes and dimensions:

Planes 5 ft. long, 22 in. wide, 21 in. high, weight 3000 lbs.					Planes 18 ft. long, 36 in. wide, 36 in. high, weight 17500 lbs.				
" 6 "	26	" 28	"	" 5000 "	" 20 "	36	" 36	"	" 18600 "
" 8 "	26	" 28	"	" 5500 "	" 16 "	42	" 42	"	" 19400 "
" 8 "	32	" 30	"	" 8150 "	" 20 "	42	" 42	"	" 22200 "
" 10 "	32	" 30	"	" 9000 "	" 24 "	42	" 42	"	" 25000 "
" 12 "	32	" 32	"	" 9850 "	" 16 "	48	" 46	"	" 21000 "
" 12 "	36	" 36	"	" 14200 "	" 20 "	50	" 48	"	" 28400 "
" 14 "	36	" 36	"	" 15300 "	" 24 "	50	" 48	"	" 32500 "
" 16 "	36	" 36	"	" 16400 "	" 20 "	60	" 60	"	" 38500 "

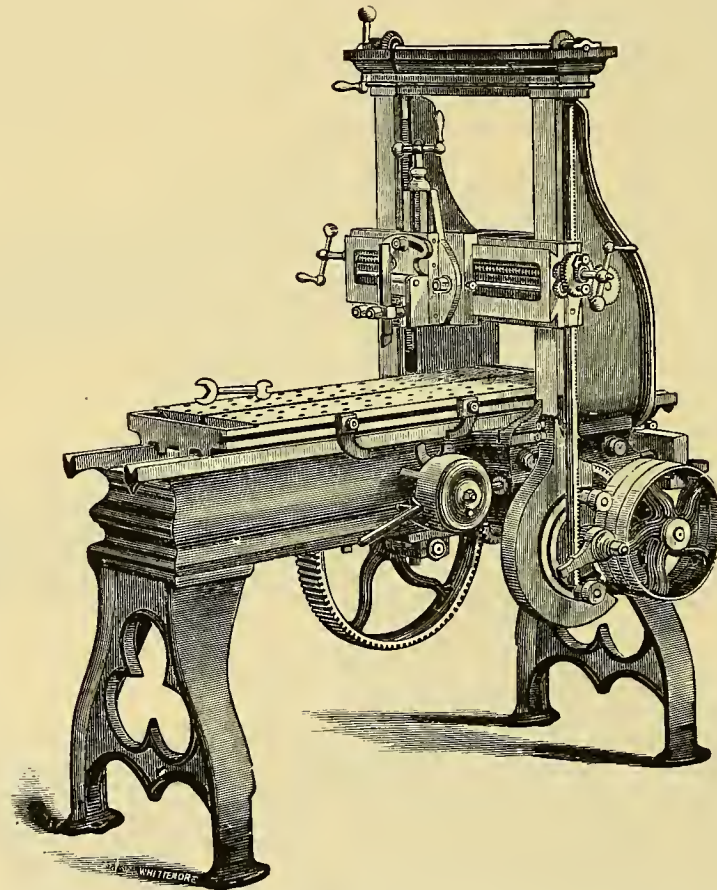
Shaping Machine.



The above cut represents a No. 3 Shaping Machine. It gives a stroke from zero to 16 inches, with a quick return motion, thereby gaining full one-third over ordinary crank motion. It will plane 3½ feet long, has two adjustable tables 16 inches square, one forming an angle-iron, 16 by 15 inches, circular mandrel, with independent feed. The circular mandrel can be almost instantly attached to or detached from the machine. It is made from new and improved patterns, very heavy, and well finished. It will do at least one-third more work than a common planer, is more convenient, and is well adapted to locomotive and other heavy work. All sizes are furnished with chuck, centres, wrenches and counter-shaft, with patent self-lubricating pulleys and boxes. Beds can be made to plane longer if desired. There are three sizes built, 8, 12 and 16 inches stroke.

Gear's Illustrated Catalogue of

Iron Planers.



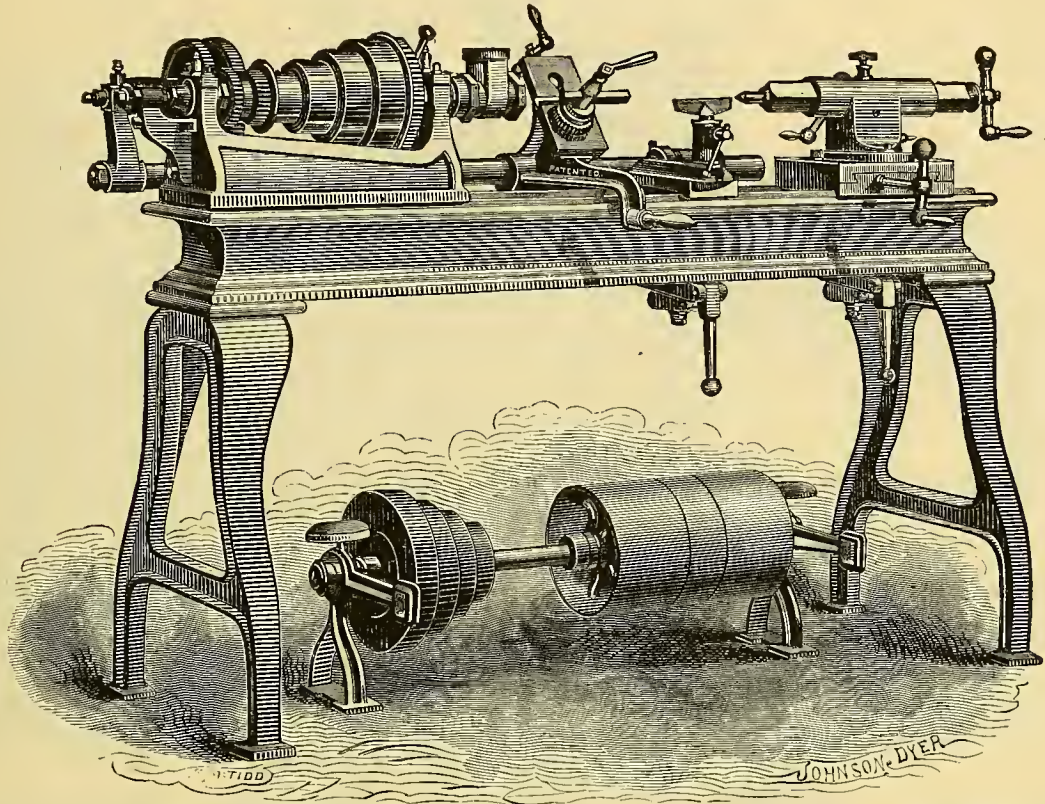
The above cut represents a planer with a bed 5 feet in length, which will plane 3 feet long, 18 inches wide and 18 inches high. There are eighteen different sizes of this machine, the dimensions of which are as follows:

Length of bed (ft. & in)	5	6-8	8-4	8-4 10	11-6 10	12-8 16	12-8	16	18	21	24	30	24	30	36			
To plane in length (ft.)	3	4	5	5	6	7	6	8	10	8	10	12	14	16	20	16	20	24
To plane in width (in)	18	22	22	26	26	26	30	30	30	36	36	36	36	36	42	42	42	42
To plane in height (in)	18	22	22	26	26	26	30	30	30	36	36	36	36	36	42	42	42	42
Weight (pounds),	1600	2600	2900	5000	5400	5800	6500	7100	7700	13000	13800	14600	15400	16200	17800	20000	23000	26000

All these planers are furnished with vertical, cross and angular feed. The gears and racks are cut. They have wrenches, counter-shafts and pulleys, and also have patent adjustable self-lubricating boxes if ordered. The holes in the table are drilled and reamed. We can recommend these planers as being first class in every respect.

Wood & Iron Working Machinery.

Brass Finisher's Lathe.



The above cut represents the No. 1 Square Arbor Lathe, with back gears, patent screw-chasing apparatus, and reverse counter-shaft; also, with dovetail set over, swivel and back motions to tail stock. This lathe is used for brass work of all descriptions, and for that purpose has no rival.

Lathes.

No. 1 Turret Lathe, six feet bed, swings eighteen inches, with engine feed, back gears, screw apparatus and overhead works.

No. 2 Turret Lathe, six feet bed, swings sixteen inches, with back gears, screw apparatus and overhead works.

No. 1 Square Arbor Lathe, five feet bed, swings fifteen inches, with dovetail set over, swivel and back motions, back gears, screw apparatus and overhead works.

No. 1 Round Arbor Lathe, five feet bed, swings fifteen inches, with dovetail set over, swivel and back motions, back gears, screw apparatus and overhead works.

Hardened Spindle and Boxes, for No. 1 Lathe, extra. Hobbs, for cutting threads, including cutter and leader, extra. Back Gears, Screw Apparatus, if not wanted, will be deducted from the bill.

No. 2 Lathe, five feet bed, swings thirteen inches, with dovetail set over, and back motion, with overhead works.

No. 2 Lathe, five feet bed, swings thirteen inches, with dovetail set over and overhead works.

No. 2 Lathe, five feet bed, swings thirteen inches, with back motion and overhead works.

No. 2 Lathe, five feet bed, swings thirteen inches, with plain tail stock and overhead works.

Hardened Spindle and Boxes for No. 2 Lathe, extra.

No. 3 Lathe, four and one-half feet bed, swings twelve and one-half inches, with dovetail set over and back motions, with overhead works.

No. 3 Lathe, four and one-half feet bed, swings twelve and one-half inches, dovetail set over and overhead works.

No. 3 Lathe, four and one-half feet bed, swings twelve and one-half inches, back motion and overhead works.

No. 3 Lathe, four and one-half feet bed, swings twelve and one-half inches, plain tail stock and overhead works.

No. 4 Lathe, three and one-half feet bed, swings ten inches, with plain tail stock and overhead works (short legs).

No. 4 Lathe, three and one-half feet bed, swings ten inches, plain tail stock, with table and foot-motion.

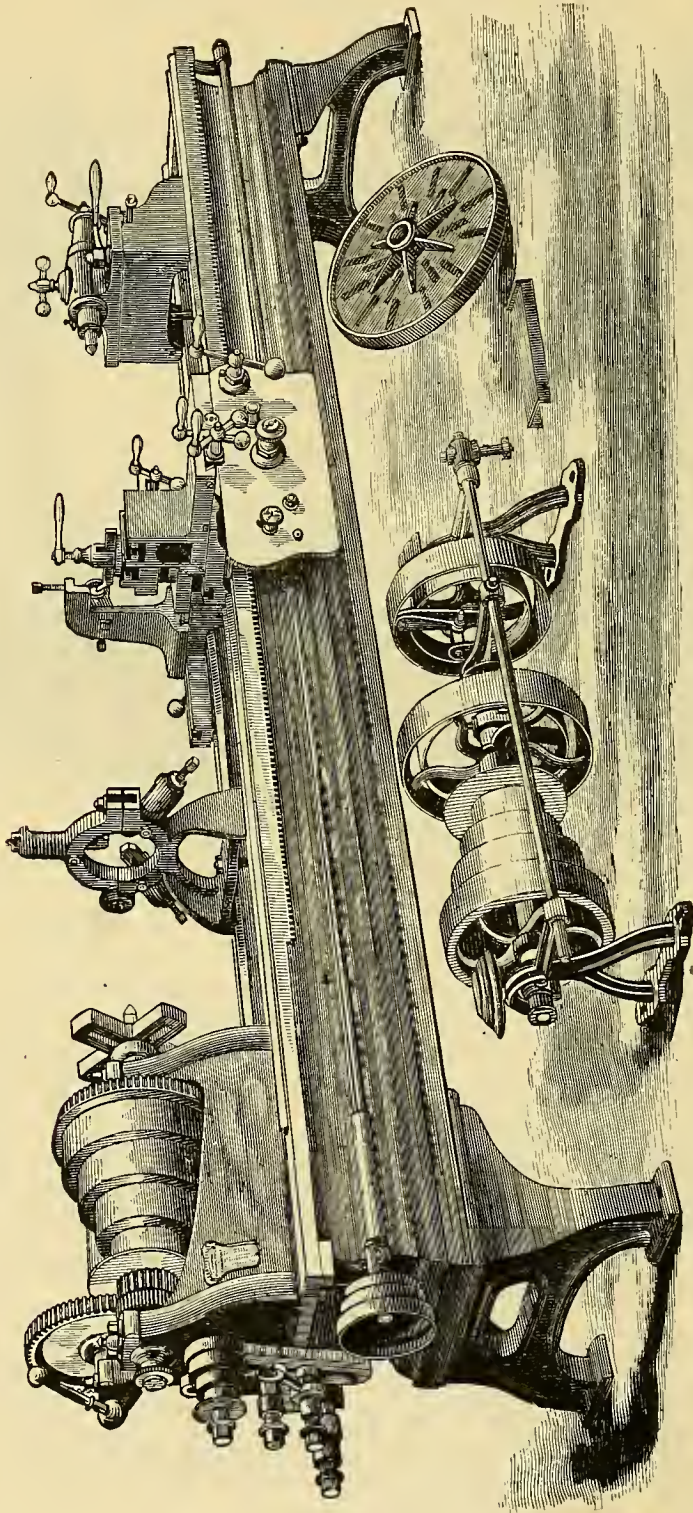
No. 5 Lathe (formerly No. 4), three feet bed, swings nine inches, with plain tail stock and overhead works.

No. 5 Lathe, three feet bed, swings nine inches, plain tail stock, with table and foot-motion.

Slide and Ball Rests.

No. 0 fits No. 2 Turret Lathe; No. 1 fits No. 1 Turret Lathe; No. 2 fits No. 2 and No. 3 Lathe; No. 3 fits No. 4 Lathe; No. 4 fits No. 5 Lathe.

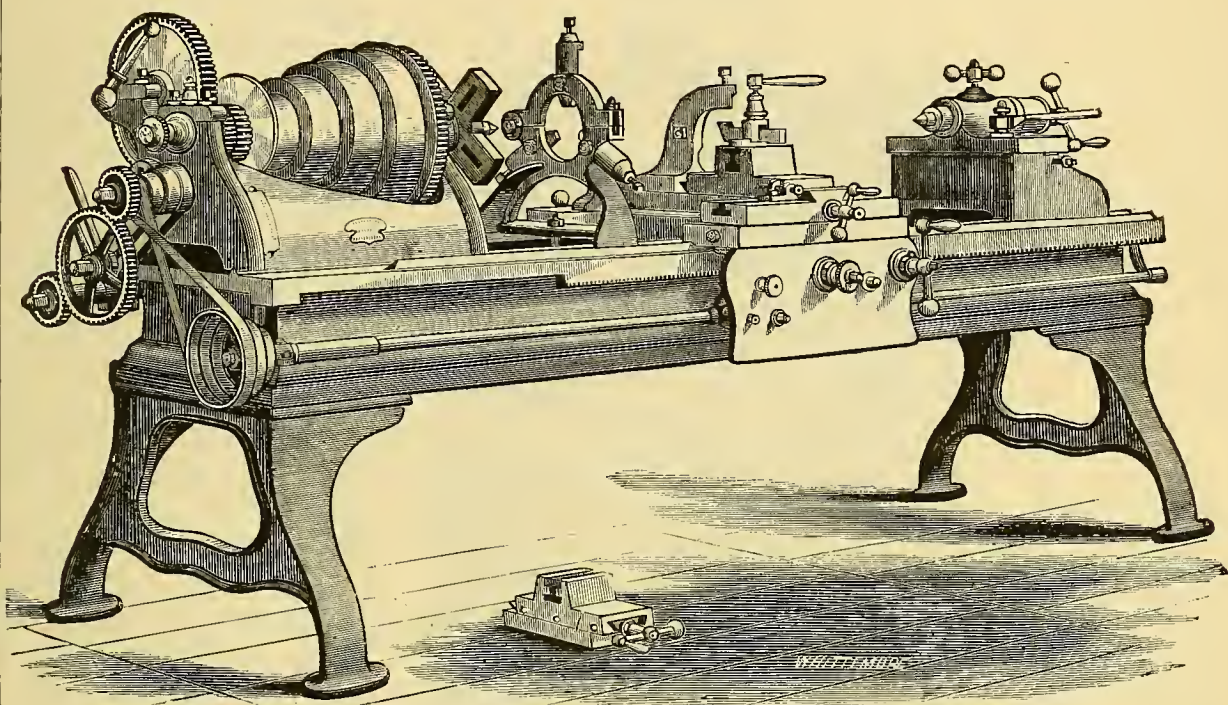
Engine Lathe.



The above cut represents an Engine Lathe twenty-five inches swing, fourteen feet bed, geared head, screw cutting independent of feed works, with an eccentric nut. It has a patent friction and inside power cross feed, and a compound rest, extra side block for turning pulleys, &c. It also has an extra large face-plate, stationary and traverse rests, steel spindles, composition boxes, wrought iron handles and balances. The wrought iron work is case-hardened. These Engine Lathes are furnished with wrought iron racks, counter-shaft, with patent self-oiling friction clutch pulleys and boxes. It will turn ten feet in length and weighs 4,650 pounds. For dimensions of different sizes of Engine Lathes, see Table on page 91.

Wood & Iron Working Machinery.

Engine Lathe.



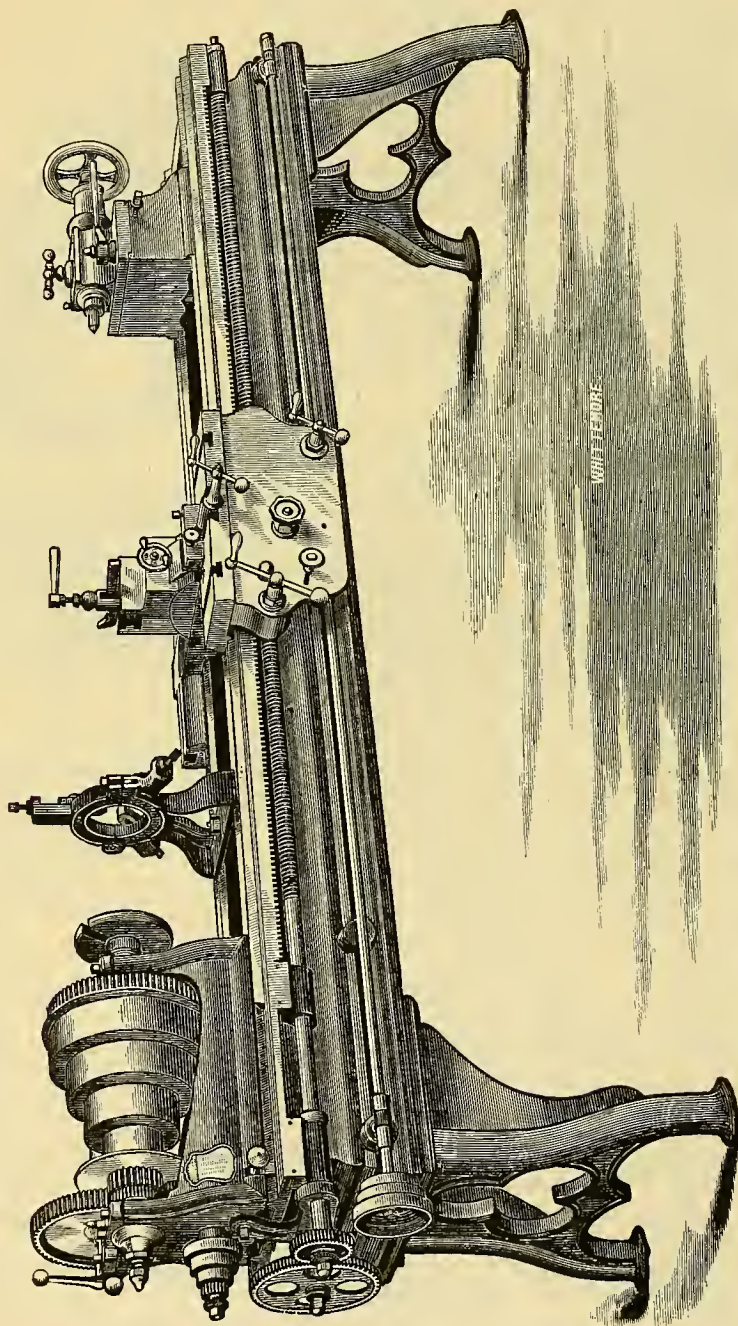
The above cut represents an Engine Lathe twenty inches swing, ten feet bed, geared head, screw cutting independent of feed works, with an eccentric nut, a patent friction and inside power cross feed which can be used at the same time. The point of the tool is elevated by the back screw on the carriage. It has also an extra side block for turning pulleys, &c., a large face-plate, stationary and traverse rests, steel spindles, composition boxes, wrought iron handles and balances. The wrought iron work is case-hardened. All these Engine Lathes are furnished with wrought iron racks, counter-shaft, with patent self-oiling friction clutch, pulleys and boxes. The lathe above represented will turn 6 feet 6 inches in length and weighs 2,500 pounds. The following Table gives the various sizes and dimensions of these

Engine Lathes.

Swing over ways (inches),	15	16	18	20	22	25	28	30	32	34	36	38	40	42	46	54	60
Length of bed (feet),.....	6	8	8	10	10	10	12	12	12	14	16	14	16	18	18	18	20
Swing over carriage (in.),.	6½	7	8½	9	10	16	20	22	21	23	25	25	27	29	32	34	51
Turns (feet and inches),....	3-6	5-2	5-6	6-8	6-4	6	7-10	7-8	7-2	9	10-10	9	10-10	12-8	12-4	11-10	13
Weight (pounds),.....	1100	1400	1900	2500	3000	3980	5100	5500	6025	6685	7190	8500	9280	10360	11500	15000	16500

Beds are made any desired length. Power cross-feed, Compound Rest and Three-tooled Rest for turning shafting and cutting screws, furnished extra.

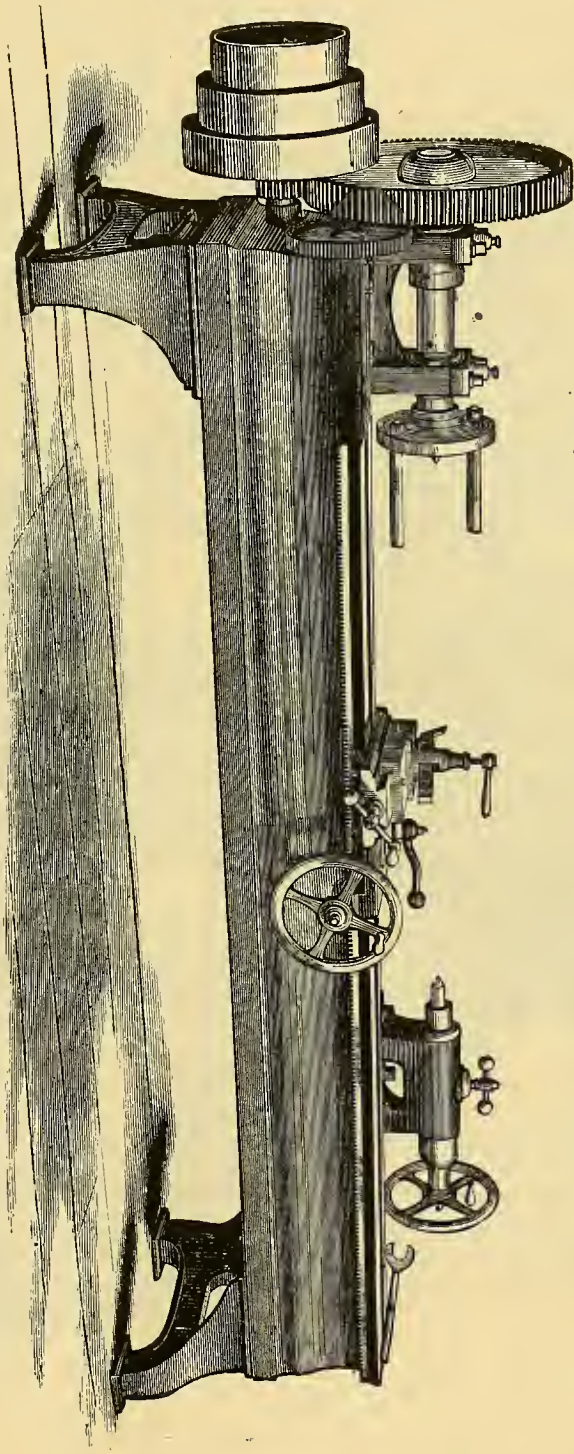
Engine Lathe.



The above cut represents an Engine Lathe with a twelve feet bed, having twenty inches swing, with or without cross-feed. All the sizes of these lathes have broad-faced cones and gears, forged steel spindles, large journals, composition or iron boxes, an improved apparatus for chasing threads, and a new and improved rest with which the tool can be immediately adjusted (raised or lowered) without loosening it, and is perfectly solid. Each machine is furnished with counter-shaft, pulleys and hangers with self-lubricating boxes. The table below gives the dimensions of the various sizes of these lathes:

Swing over ways (inches),	12	13	14	15	16	18	20	22	24	26	28	30
Length of bed (feet),	5	5	6	6	7	8	9	10	10	12	12	12
Swing over carriage (inches),	8½	9½	10	10½	11½	12½	14½	15½	17	19	20½	22½
Turns (feet and inches),	2-9	2-9	3-6	3-6	4-4	5-2	5-9	6-3	6	8	7-6	7-6
Weight (pounds),	1150	1200	1400	1450	1710	2200	2880	3820	4200	4250	6560	6600

Car Axle Lathe,

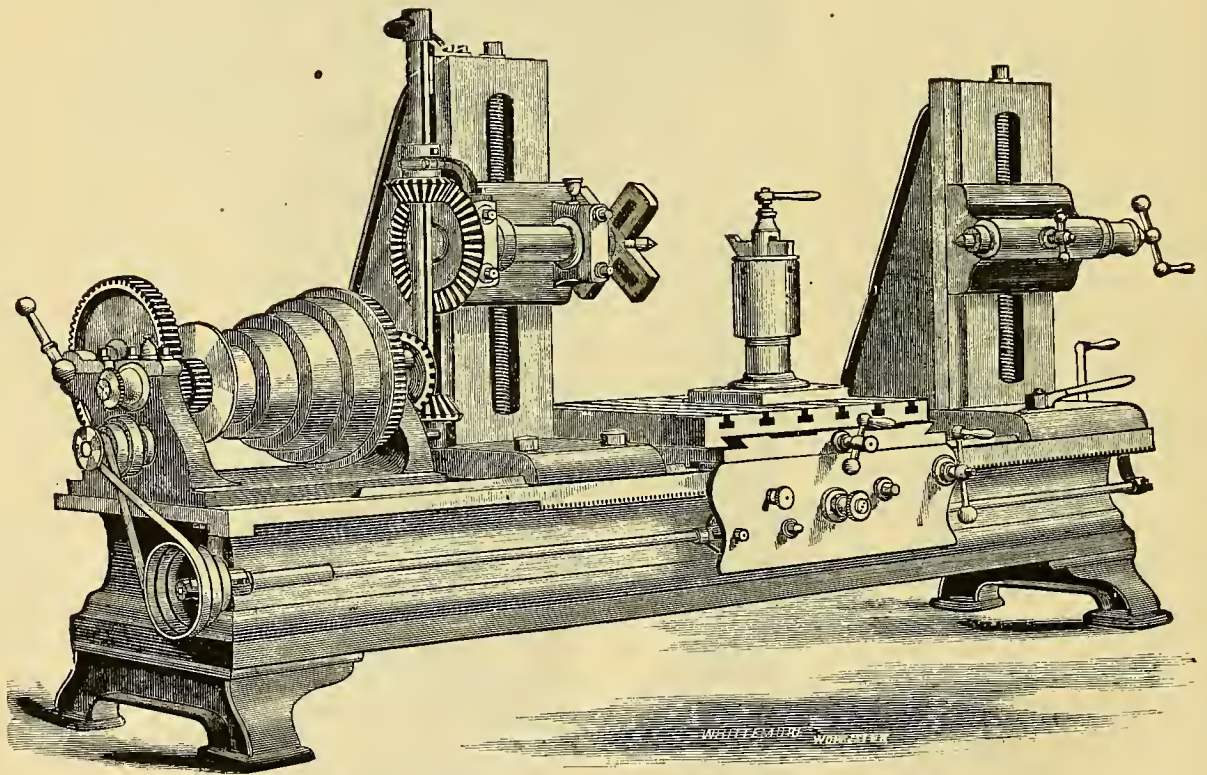


Expressly Designed for Turning of Car Axles.

The above cut represents an Axle Lathe made from new and improved patterns, and especially adapted to turning car axles. It has steel spindles and composition boxes, with two grades of feed, one twelve and the other sixteen to the inch (not shown on the accompanying cut); steel screws, head spindle, four inches in diameter; tail stock spindle, three inches in diameter. The distance between centres is eight feet two inches, the cone pulley is nineteen inches in diameter, with four inch face. It has a pinion gear on cone, five and one-half inches in diameter; spindle gear, thirty inches in diameter, with three inch face. There are furnished with this lathe wrenches, and counter-shaft with patent self-lubricating pulleys and boxes. It weighs 4,200 pounds. We have no hesitation in recommending this lathe for use in railroad shops, or to other parties who may desire a machine for this kind of work, as being first class in every particular.

Gear's Illustrated Catalogue of

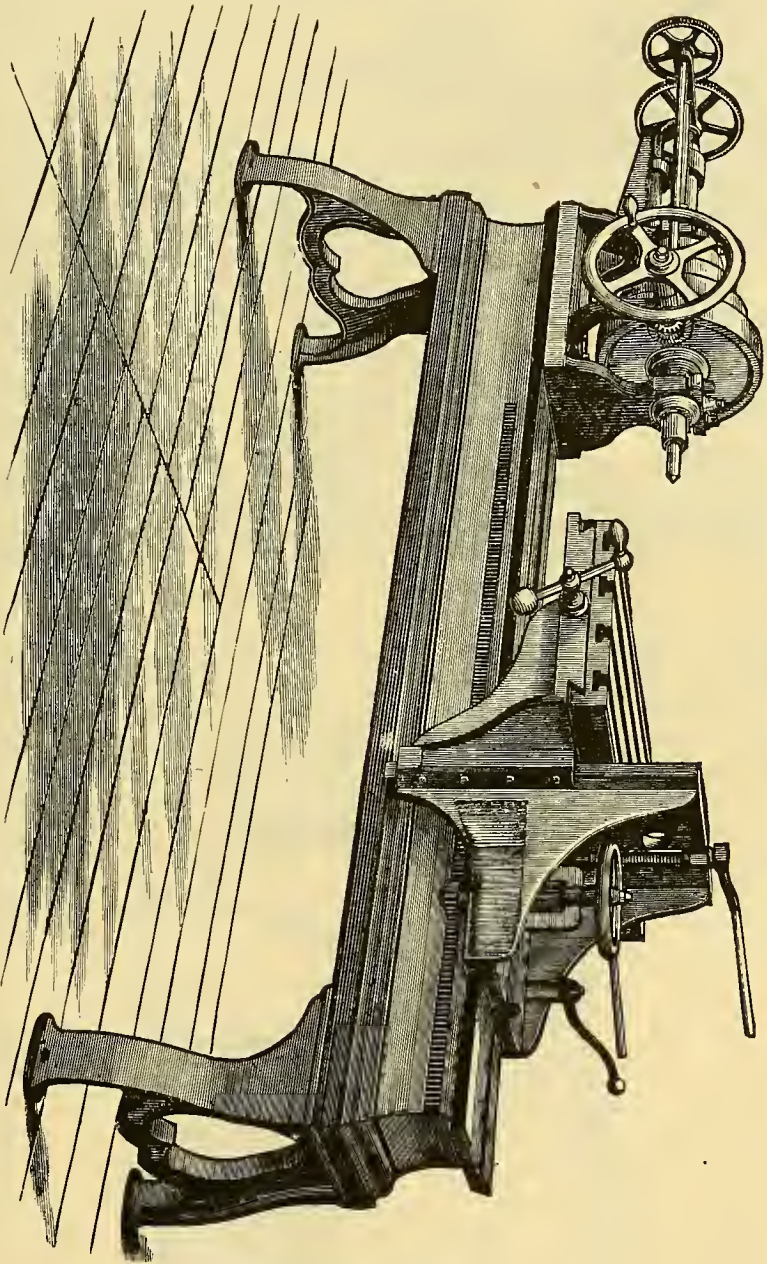
Horizontal Boring Mill.



The above illustration represents a Horizontal Mill on a 14 feet bed, which will take in a boring bar 6 feet 3 inches long. It swings $5\frac{1}{2}$ feet over the ways and $4\frac{1}{2}$ feet over the table. It is intended for boring cylinders and other work, but can be used for chucking and turning pulleys, $3\frac{1}{2}$ feet and smaller in diameter, as it has a compound rest which can be bolted to the table. It has, also, a patent power cross and friction feed, and a large extra face plate. The head and tail stock moves on a parallel line with the table, by the means of a rod and bevel gears. The upright to which the tail stock is attached, can be moved at any point on the bed-piece by a screw. It has steel spindles, composition boxes, and all the wrought iron work is case-hardened. Any length of bed desired will be furnished. With the above are furnished self-oiling counter-shaft, pulleys and hangers. It weighs 9,500 pounds.

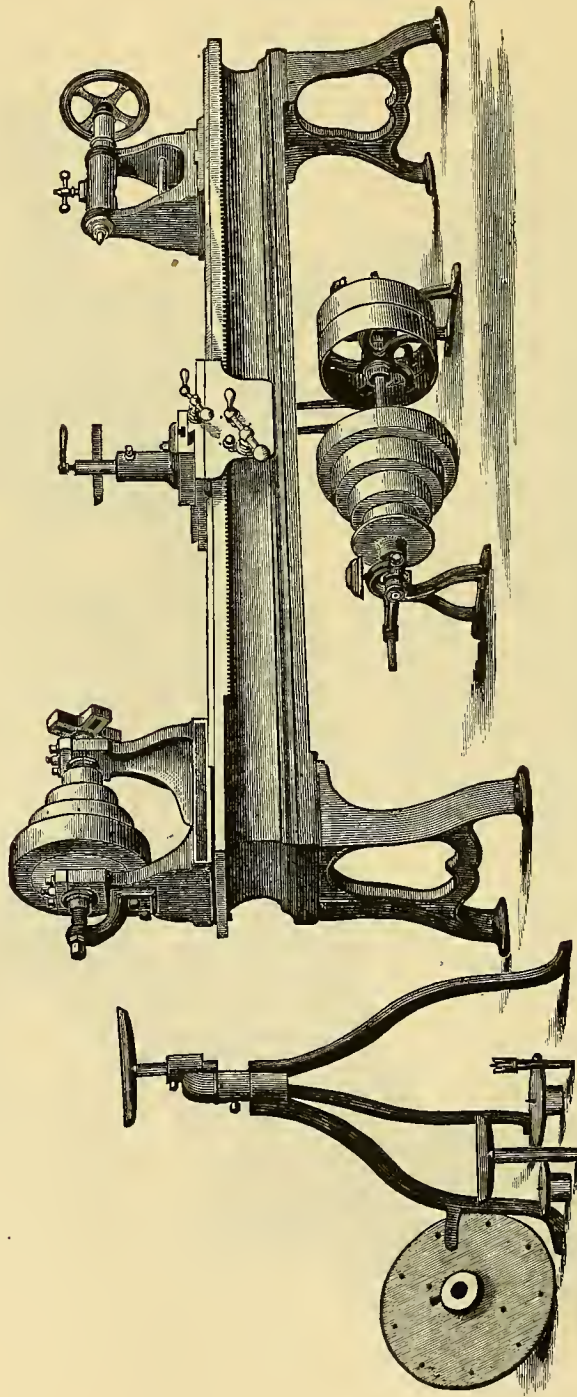
Wood & Iron Working Machinery.

Traverse Drill.



The above cut represents a No. 2 Traverse Drill on an eight feet bed, for boring and drilling. It has an adjustable table three feet long and eighteen inches wide. When at its lowest point it is eight and one-half inches from the center of the spindle, and can be raised to any desired height by means of a screw. It can be furnished with power feed if desired. The No. 1 Drill is furnished with back gears and heavier head stock. The adjustable table is raised and lowered by two screws with rod and bevel gears. Both sizes are furnished with a counter-shaft, with patent self-oiling pulleys and boxes, wrought iron track and pinion, steel spindle, and composition boxes. The wrought iron work is case-hardened. Any desired length of bed can be furnished.

Pattern Maker's Lathe.

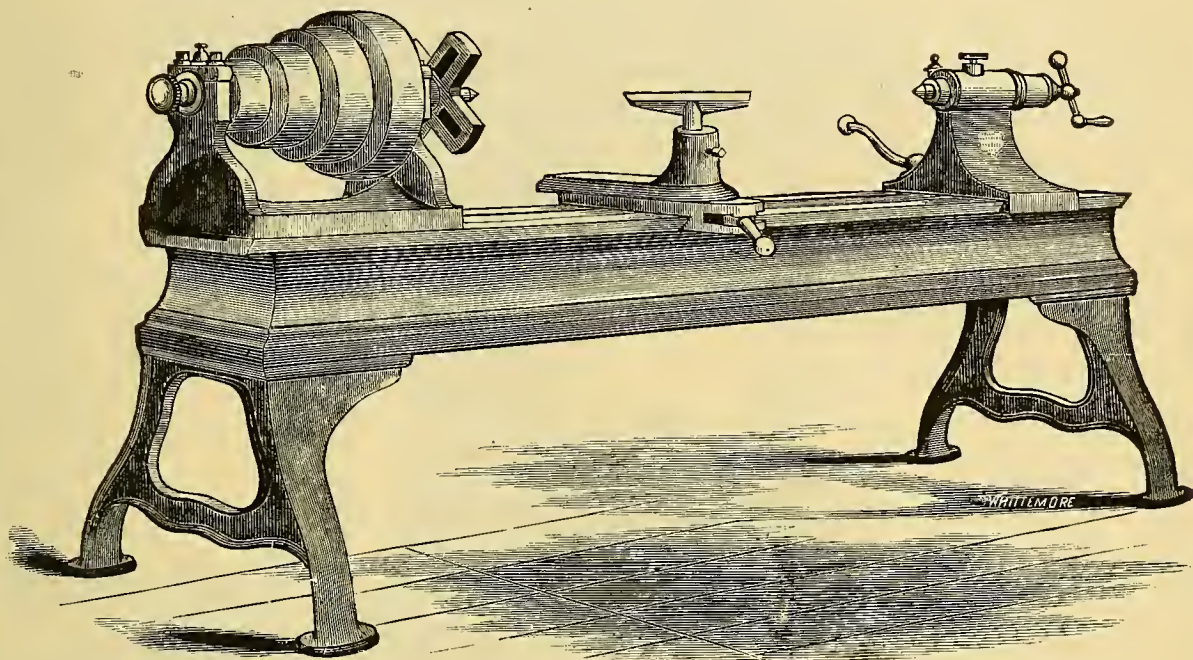


An Excellent Machine for Pattern Makers.

This cut represents a Pattern Maker's Lathe on a 10½ feet bed. It swings 26 inches over the ways, and 22 inches over the carriage. It has steel spindles and composition boxes. The carriage slides on the ways to feed by hand with rack and pinion. It has also a screw attachment for feeding across the bed by hand, and an adjustable post for holding the tools or rest. The tail stock can be set over to turn tapers. It has a large face-plate for the back end of the spindle, with a stand and rest to turn 7 feet in diameter. It has also two gimlet pointed face-plates, and one spur face-plate. A counter-shaft is furnished, with patent self-lubricating pulley and boxes. It weighs 2,250 pounds.

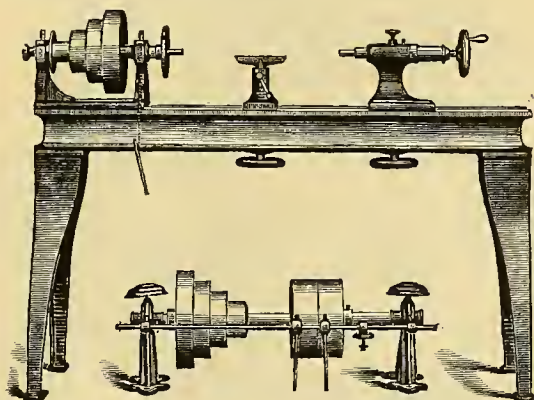
Wood & Iron Working Machinery.

Large Hand Lathe.



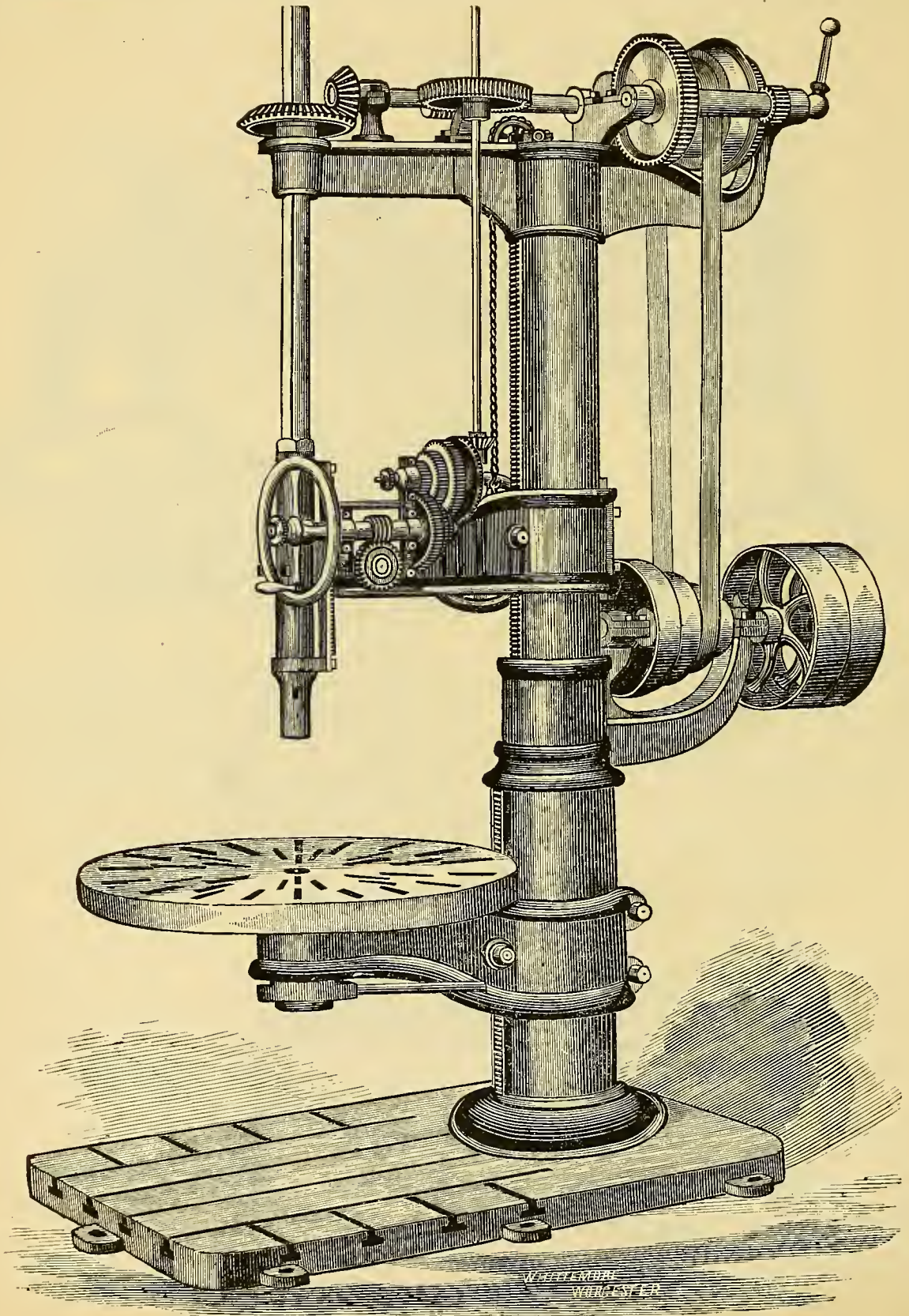
The above illustration is drawn from a twenty-inches swing, ten feet bed Hand Lathe, but represents the parts and works generally of larger and smaller sizes. The different sizes of these hand lathes are made from new and improved patterns, with large broad faced cone, steel spindles and composition boxes. All the wrought iron work is case-hardened. They are furnished with a counter-shaft, with iron cone and patent self-oiling pulleys and boxes. There are four sizes, viz. : Thirteen inches swing with a six feet bed, and weighs 575 pounds. Sixteen inches swing with a six feet bed, and weighs 975 pounds. Twenty inches swing with a six feet bed, and weighs 1,200 pounds. Twenty-four inches swing with a ten feet bed, and weighs 2,200 pounds.

Small Hand Lathe.



This cut represents a small Hand Lathe with a five feet bed and fourteen inches swing, with counter-shaft and hangers complete.

Gear's Illustrated Catalogue of



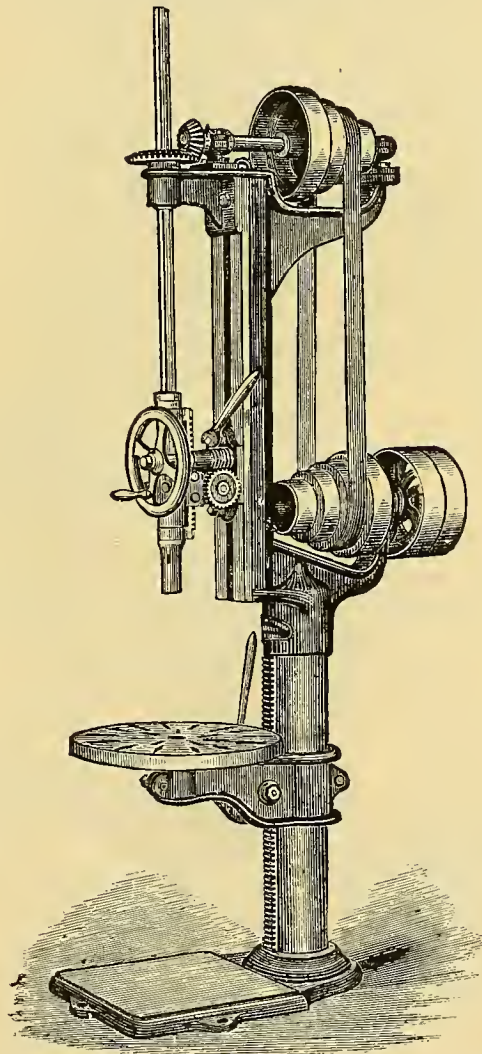
Wood & Iron Working Machinery.

Large Upright Drill.

FOR ILLUSTRATION SEE PAGE 98.

The cut on page 98 represents a No. 4 Upright Drill, with an adjustable table, 42 inches in diameter, and receives a piece 54 inches in height. It has a traverse of 26 inches, and is movable around the column, making it adjustable to any desired point. The bed-plate can also be used for a drilling table, being perfectly true with the spindle, and will receive a piece 72 inches in height. It has a patent friction feed. It has also steel spindles and cut gears, with three changes of feed, given by a cone of gears. It weighs 5,300 pounds.

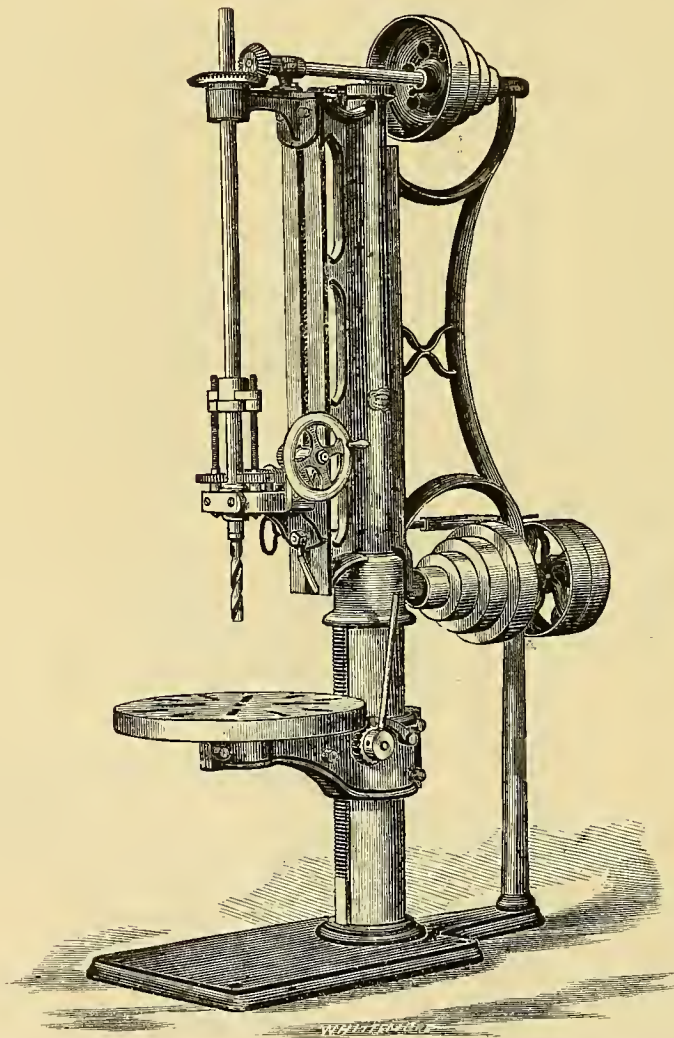
No. 1 Upright Drill.



The above cut represents a No. 1 Upright Drill. The table, which is movable around the column (making it adjustable to any desired point), is 18 inches in diameter, has a traverse of 20 inches, and will receive a piece 36 inches in height. The stationary or lower table is true with the spindle, and will receive a piece 48 inches in height. It has a steel spindle and wrought iron racks and pinions, and all the gears are cut. It weighs 600 pounds.

Gear's Illustrated Catalogue of

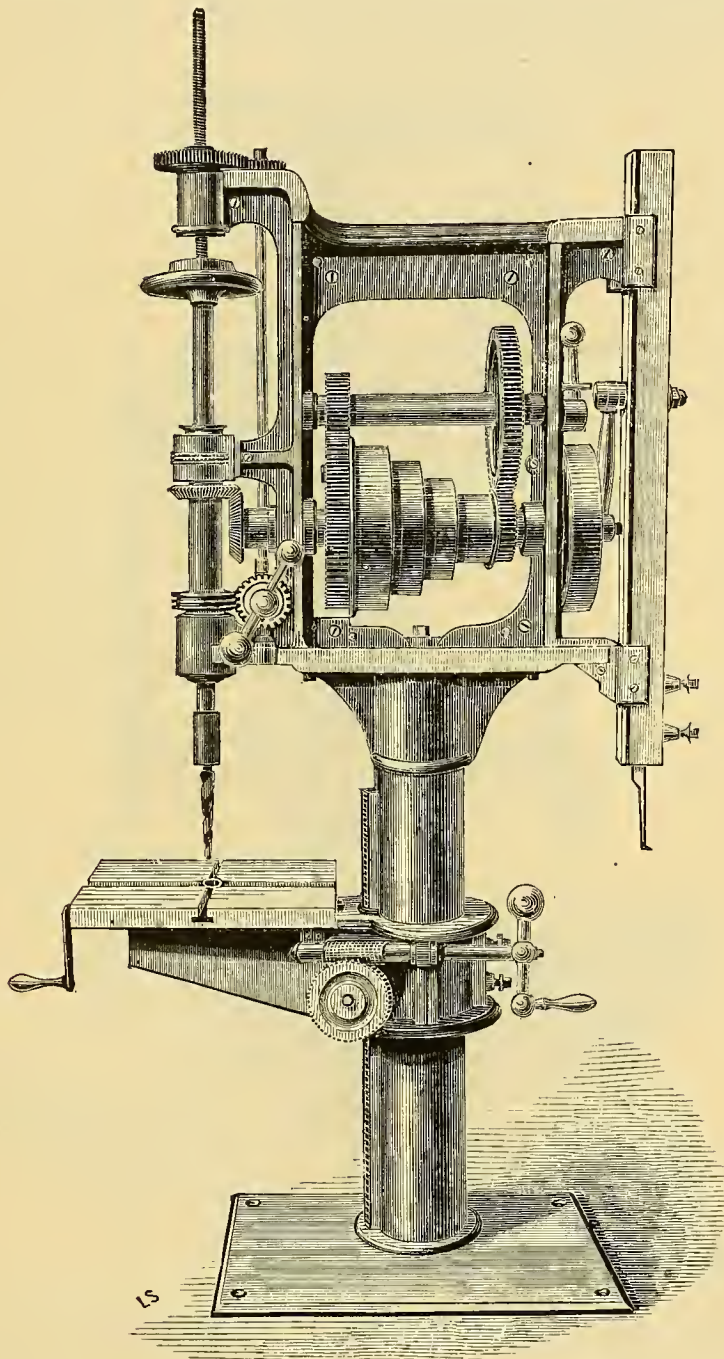
Medium Size Upright Drill.



The above illustration represents a medium size Upright Drill with an adjustable table 24 inches in diameter. The machine will receive a piece 34 inches in height. It has a traverse of 24 inches, and is movable around the column, making it adjustable to any desired point. The bed-plate can be used for a drilling table, being perfectly true with the spindle, and will receive a piece 54 inches in height. It has a patent gear feed with three changes. All the gears are cut, and all the parts are made in the most workmanlike manner.

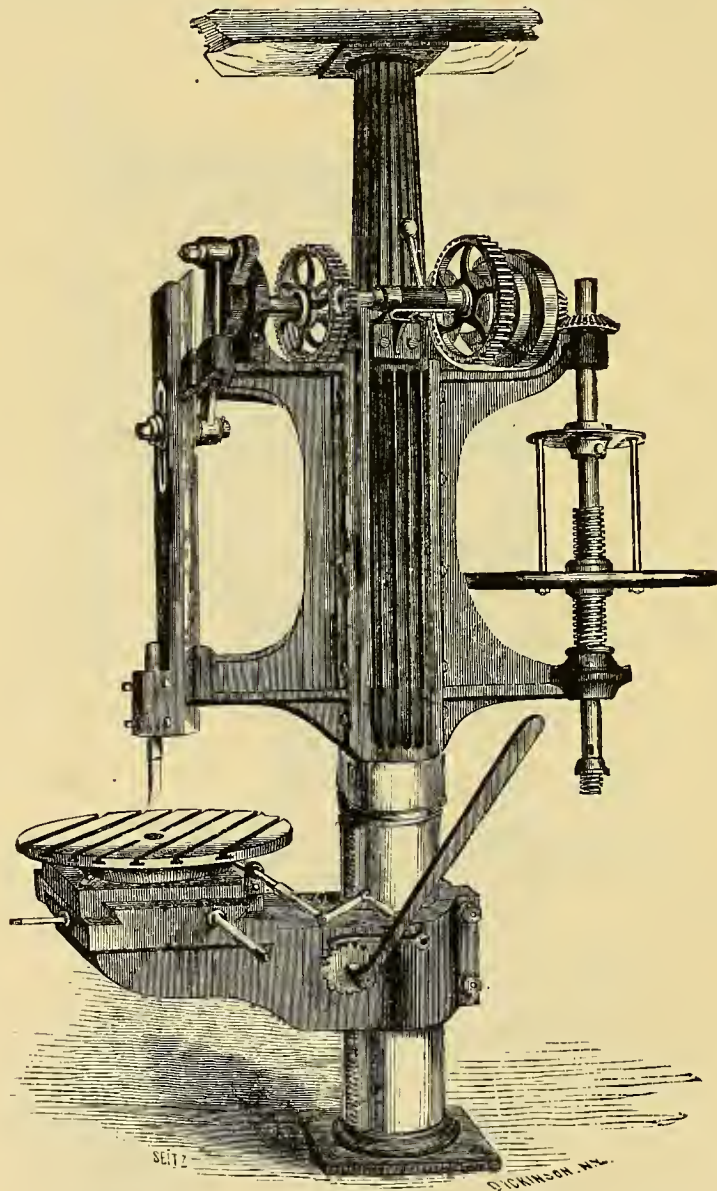
Wood & Iron Working Machinery.

Combined Drill and Slotting Machine.



The machine above represented will bore and spline a pulley 25 inches in diameter. There are several different sizes, swinging from 10 to 44 inches. The larger machines carry a 3 inch drill strongly, and are fitted with change gears for quick or slow feed. Either side can be instantly thrown out and will remain stationary while the other is running. Only the best materials are used, and the work is done in the most thorough manner. Each machine is furnished with a counter-shaft and boxes, with a self-oiling loose pulley.

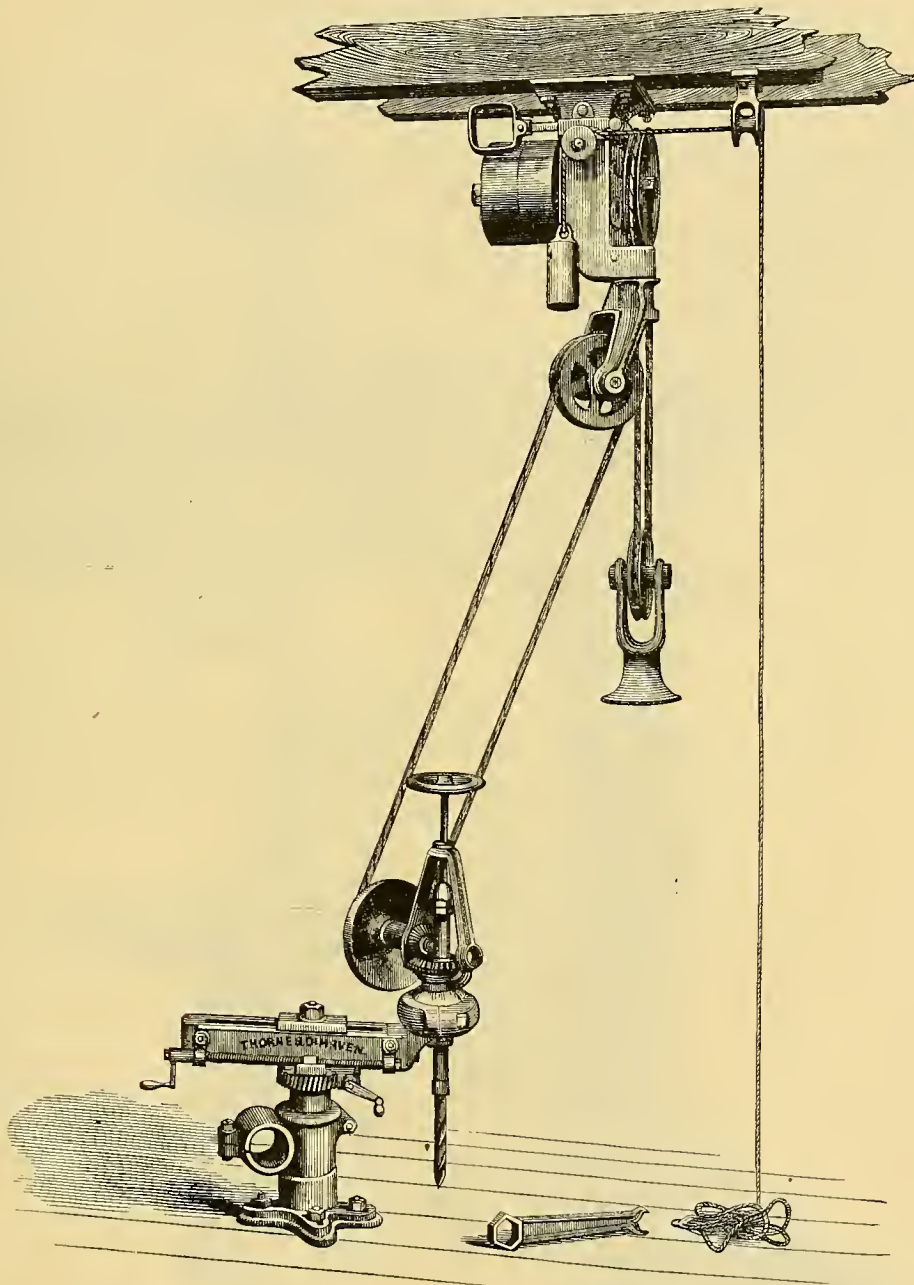
Combined Slotter and Drill.



The upright of this machine is strong and can take the place of a column in a building. Both arms are fastened to it, and on the lower part the table revolves, and can be placed either under the drill or slotter, or one side out of the way. The table is moved vertically by means of a rack and pinion and, with the exception of self-feed, has all the movements of a regular slotter. It is strongly back-gearred, has large and wide cones, and weighs about 2,500 pounds. For drilling of all kinds, key-seating, and all work to which a slotter can be applied, this is a very convenient machine. The stroke of the tool-bar can be regulated to anything under twelve inches, and it will drill or slot to the center of forty inches.

Wood and Iron Working Machinery.

Portable Radial Drill.



This machine has all the conveniences and adjustments of Radial Drilling Machines and can be placed with greater facility than a ratchet-brace, and will drill at any angle, in any position, at any distance, and in any direction from the power. There are three sizes of this Drill, viz.:

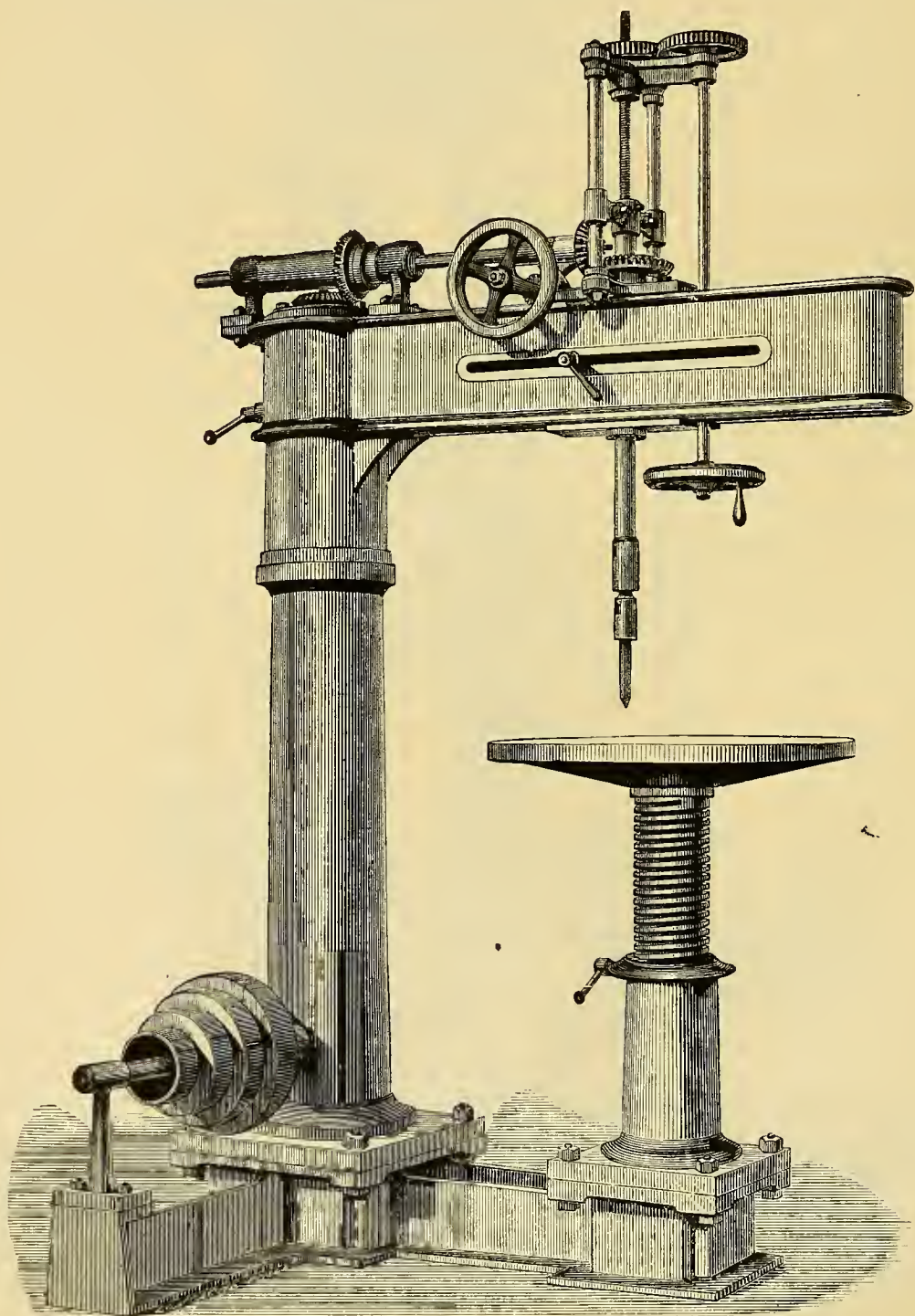
No. 1. This machine will drill up to $1\frac{1}{4}$ inch diameter. The spindle is of $1\frac{1}{4}$ inch steel; its socket is the same as the No. 2 Morse Twist Drill Socket and has 6 inches feed. The radial arm will rotate the point of the drill through a circular area of 33 inches diameter, by means of a worm and tangent wheel. It weighs 120 pounds.

No. 2. This machine will drill up to $1\frac{3}{4}$ inch diameter. The spindle is of $1\frac{1}{2}$ inch steel; its socket is the same as the No. 3 Morse Twist Drill Socket and has 6 inches feed. The post has 6 inches vertical adjustment. The radial arm will rotate the point of the drill through a circular area of 43 inches diameter, by means of a worm and tangent wheel. It weighs 200 pounds.

No. 3. This machine will drill up to 2 $\frac{1}{4}$ inches diameter, in the solid, and bore up to 6 inches diameter with boring bar and cutter. It has 8 inches feed, working *automatically*, if desired, with three speeds. It weighs 230 pounds.

Gear's Illustrated Catalogue of

Improved Radial Drill Press.

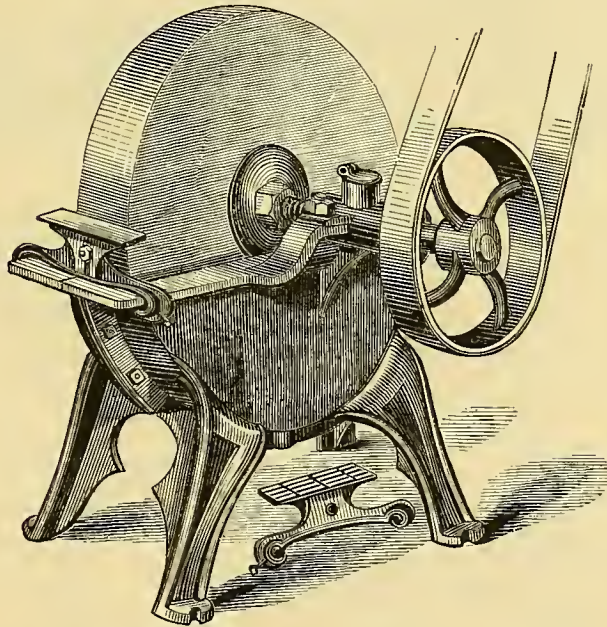


Improved Radial Drill Press.

FOR ILLUSTRATION SEE PAGE 104.

This Improved Radial Drill has this advantage, in addition to any other in ordinary use, that it adapts itself to the position of the piece of work to be drilled, thus obviating the necessity of moving and adjusting the latter, which, in the case of heavy pieces, is often tedious and difficult. The manner of accomplishing this will be readily understood by reference to the cut, in which the spindle is shown in its proper position, over the table for small work. The radiating arm is fitted to a neck at the top of the column, and traverses freely in all directions. In this slides the head, carrying the drill-spindle and gearing, which is moved backwards and forwards by a rack and pinion and hand-wheels on each side of the machine. It will be seen that the arm or swing is capable of being placed in any position, radiating from the column, as a center, and that the drill can hence be made to reach any point within the circle, except the part occupied by the column and the driving pulley. A large number of holes may thus be drilled in succession in the same surface, without moving the work, an advantage which will commend itself to machinists. It is especially useful in fitting up such work as steam engines, cylinders, steam chests, bed plates, &c. All work which cannot be conveniently handled may be drilled at one setting, instead of many, thus saving a vast amount of labor and inconvenience. Different kinds of bed plates are made, and an automatic feed can be attached, when desired.

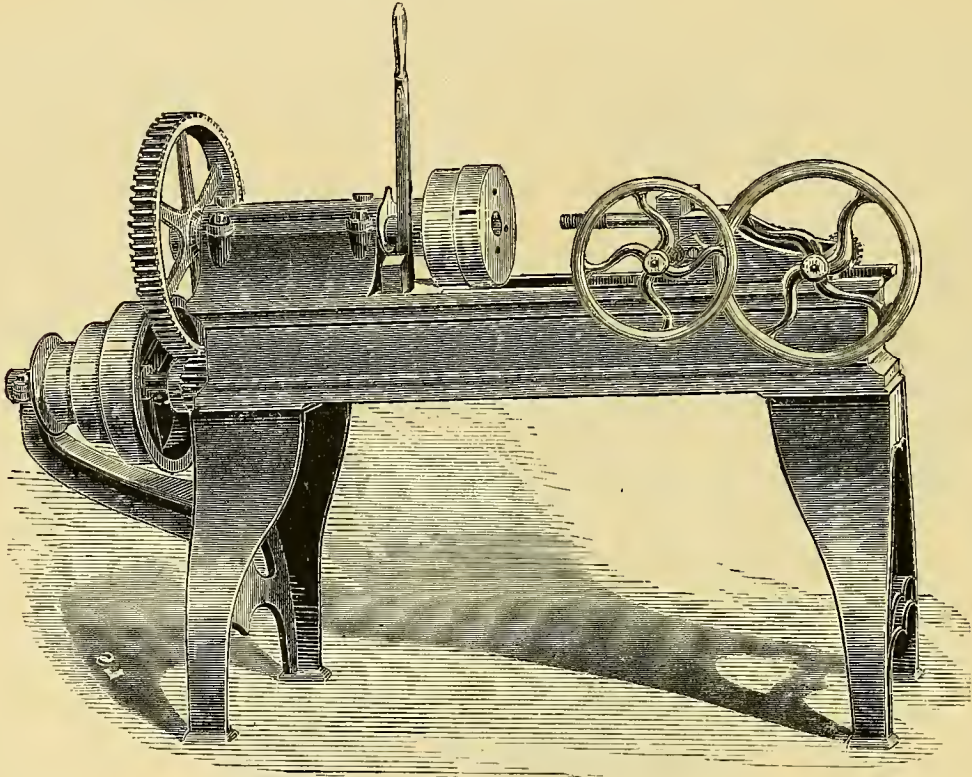
Patent Grindstone Frame.



There are three sizes of the Patent Grindstone Frame above represented. No. 1 takes a 30 by 4 inches stone; No. 2 a 36 by 6 inches stone, and the No. 3 a 48 by 8 inches stone. The legs are cast on solid to the body of the frame, and are constructed and braced in such a manner as to prevent racking and breakage, which is a great advantage over the old style of pipe-stem legs that are bolted on the frame or let in on a dovetail. The spindle is of wrought iron, and has two loose flanges and two nuts, to throw the stone in the center of the trough. The bearings are long, and Babbitted, and are covered in such a manner as to prevent the entrance of any dirt or grit to cut them away. It has a tool-rest, which clamps to the top of the frame by a set-screw. The top or face of the rest is beveled, and by reversing the rest it will give an angle to or from the stone.

Wear's Illustrated Catalogue of

No. 2 Bolt Cutter.



The above cut represents a No. 2 Bolt Cutter. The thread is cut with the dies, which are fixed in the head and revolve around the bolt, which is held stationary in a vise, operated by a right and left screw on the shaft of the small hand-wheel. The bolt carriage is moved forward and backward by a rack and pinion operated by the large hand-wheel. This is much more convenient, especially with long bolts, than to revolve the bolt. The die cuts the thread by passing over the bolt but once; they never run backward, which obviates tearing the thread off the bolt or injuring the cutting edge of the dies. When the thread has been cut as far as desired, the dies are opened by moving the lever, and the bolt is withdrawn while the machine continues in motion as before. Another bolt may then be inserted, and the operation continued with much saving of time and labor. The dies can be removed in thirty seconds and those for another substituted, without turning or loosening a bolt, screw or nut, and when the dies are placed in the head of a machine it combines every advantage of a solid die and adjustable dies. Should the dies cut too large or too small, they may be adjusted in thirty seconds to any variation, from an eighth of an inch down to the hundredth part of an inch. By this means bolts can always be made to fit the nuts, no matter how much the taps may be worn. It will cut the usual V, square, or ratchet threads, with equal facility, and at one cut. It is provided with an "index," by the use of which the machine can be instantly adjusted to cut the required size, so that the bolts can be made to fit the nuts without the vexatious "cutting and trying" that is required on most machines. It also is provided with means for tapping nuts when needed, and the change from cutting threads to tapping can be made in a minute, or *vice versa*. There are three sizes of this machine, and each size is furnished with taps and dies, as named below, unless otherwise ordered.

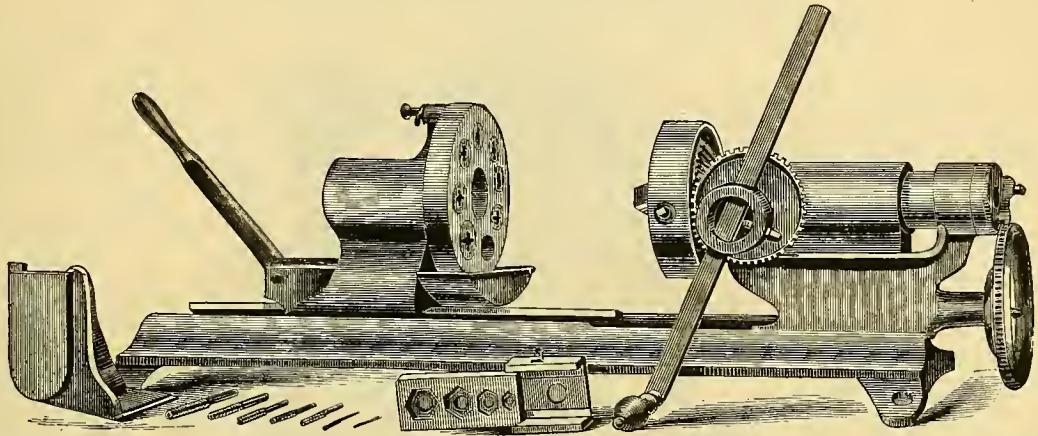
SMALL SIZE, OR NO. 1. Weight, with counter-shaft, pulleys, hangers, &c., complete, about 700 pounds. Diameter of bolt, $\frac{1}{2}$, 5-16, $\frac{3}{8}$, 7-16, $\frac{1}{2}$, $\frac{3}{4}$. Threads per inch, 20, 18, 16, 14, 13, 11, 10. The speed of the counter-shaft should be 120; diameter of pulley, 12 inches; face of pulley, 3 inches. This size of the machine is not geared, but it has a cone of three pulleys, with broad belt surface, sufficient for the work the machine is designed to do.

MEDIUM SIZE, OR NO. 2. Weight, with counter-shaft, pulleys, hangers, &c., complete, about 1,000 pounds. Diameter of bolt, $\frac{1}{2}$, $\frac{3}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$. Threads per inch, 13, 11, 10, 9, 8, 7, 7. The speed of the counter-shaft should be 150; diameter of pulley, 12 inches; face of pulley, 3 inches.

LARGE SIZE, OR NO. 3. This size is of the same general style as the No. 2, but it is much stronger and heavier, and is doubly geared. Weight, with counter-shaft, pulleys, hangers, &c., complete, about 2,000 pounds. Diameter of bolt, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$, $1\frac{5}{8}$, $1\frac{3}{4}$, $1\frac{7}{8}$, 2. Threads per inch, 8, 7, 7, 6, 6, $5\frac{1}{2}$, 5, 5, $4\frac{1}{2}$. The speed of the counter-shaft should be 150; diameter of pulley, 18 inches; face of pulley, $4\frac{1}{2}$ inches.

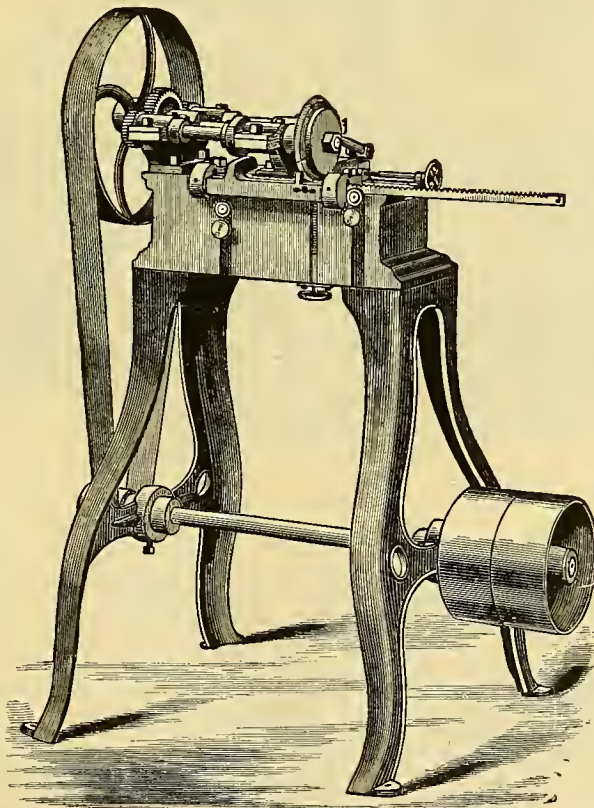
Wood & Iron Working Machinery,

Patent Hand Bolt Cutter.



The above cut represents a patent Hand Bolt Cutter. Each machine is furnished with a set of seven taps and dies, from $\frac{1}{4}$ to $\frac{3}{4}$ of an inch.

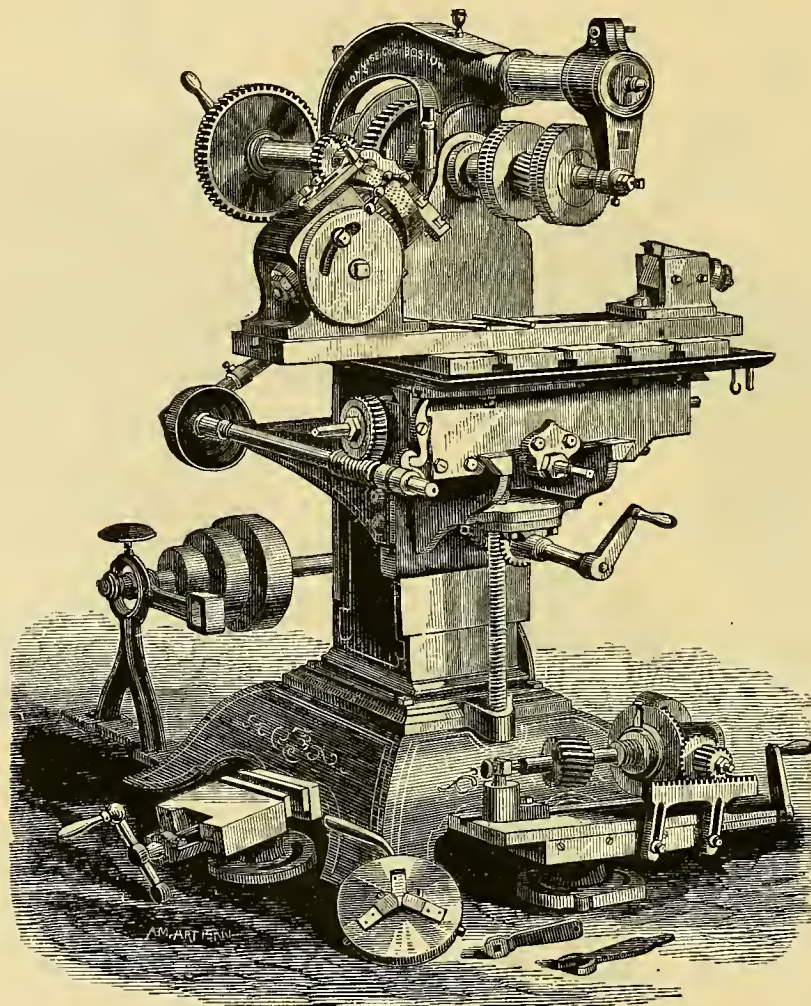
Patent Saw Filing Machine.



This is a newly invented and patented machine, designed particularly for filing band saws, scroll saws, and any straight saws, of uniform width. It is wholly automatic, the saw being held by clamps, and fed along for any size of tooth, which can be regulated by a screw, and the tooth is cut by a circular segment file. Each tooth is set as it is filed, the amount of set being easily regulated. It is especially valuable for filing hand-saws, as it works rapidly, and leaves every tooth even and perfect in shape and set. The tight and loose pulleys are $8\frac{1}{2}$ inches in diameter, $3\frac{1}{2}$ inches face, and should make 200 revolutions per minute, giving the file 50 revolutions. The machine weighs 225 pounds, and requires one-half horse-power to drive it. The amount of belting required is six feet of $2\frac{1}{2}$ inches. The main driving belt should be $2\frac{3}{4}$ inches wide.

Gear's Illustrated Catalogue of

Milling Machine.



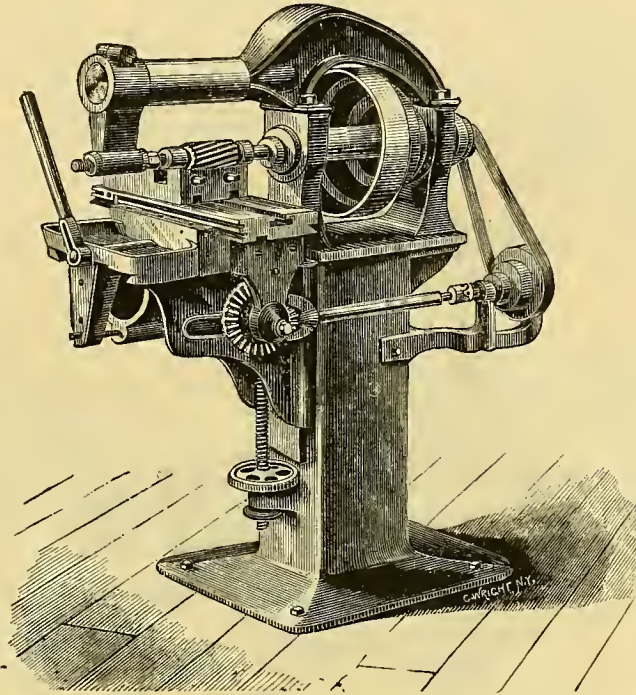
Showing Universal Head and Centers in place; also, Spiral Cutting Attachment, Vise, &c., at base.

This machine is perfectly adapted for plain milling, and equals in power the ordinary milling machine. Its capacity and range, however, are double those of the common machine, while its peculiar construction admits of its application to an almost endless variety of work, quite impossible with machines of the ordinary styles. It is especially adapted to the making of the numerous tools in use in machine shops, such as fluting taps and reamers, cutting gears, both spur and bevel, and spirals of any pitch; finishing nuts, and bolt and set-screw heads; splining rods and shafting, &c.; also for making the cutters performing these and other kinds of work. The main arbor or spindle is of solid forged steel, 4 inches in diameter in its largest part, with true anti-friction curve upon its front end. If properly taken care of, therefore, it will never bind, work loose, or wear out of true. The arbor is 2 feet in length, and its rear bearing is a lined box. Upon its front end a screw is cut so that a chuck or face-plate may be used on it, and it has a nine-sixteenths hole through its entire length. The centre hole for the mill spindle is one and three-sixteenths inch outside, and tapers for seven inches in depth. The driving cone is connected with a full back gearing, like the head of an engine lathe, giving six speeds and allowing mills of every size to be used. Above the spindle is a large arm, carrying an outside centre support, by means of which cutters can be used at a distance of fifteen inches from the front of the machine; the rear part also forms a strong brace. The arm can be removed when the character of the work requires an unobstructed space above the mill spindle.

The weight of the machine, without attachments, is 1,300 pounds. Complete, 1,700 pounds. Perpendicular range, sixteen inches; length of feed, sixteen inches; cross motion, about five inches. The "attachments" comprise a rotary vise, spiral cutter, and a universal head, with its complement of a back-center and an extra table for taking in long work. The machine is sold either with or without attachments, at the option of the purchaser.

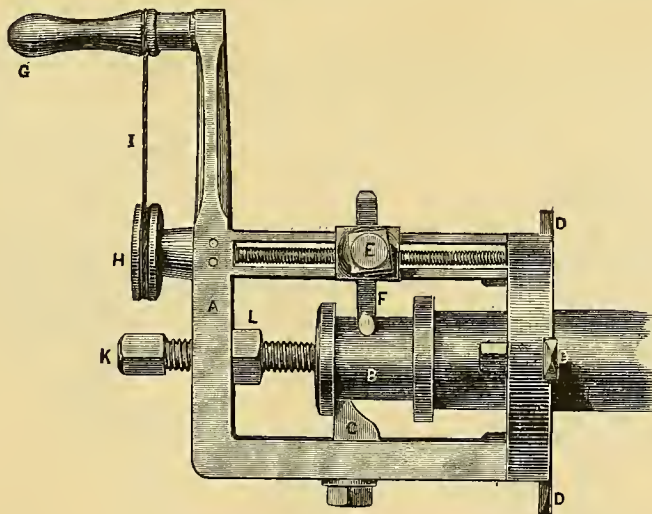
Wood & Iron Working Machinery.

Milling Machine.



This machine is designed for all light milling. The spindle is driven by a large cone pulley. The feed-table is six and one-fourth inches wide, twenty-four inches long, and is fed by a worm gear. The machine weighs 1,100 pounds.

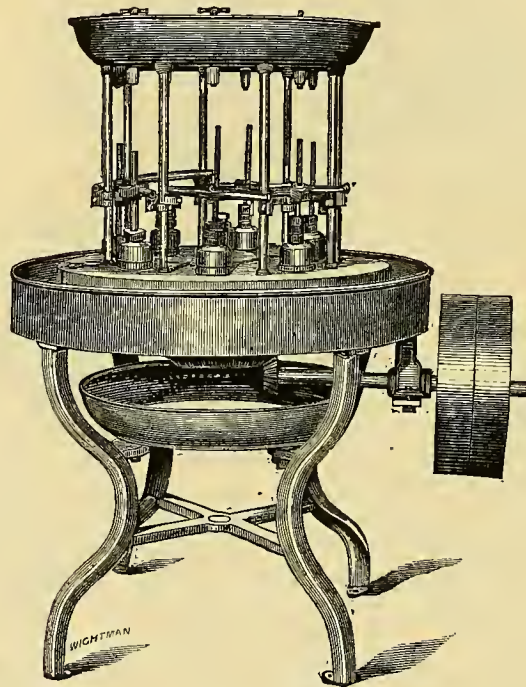
Wrist or Crank-Pin Lathe.



Hand Power.

This machine will turn wrist or crank-pins to engines without taking them out, and leave them as perfect as when first made.

Nut Tapping Machine.

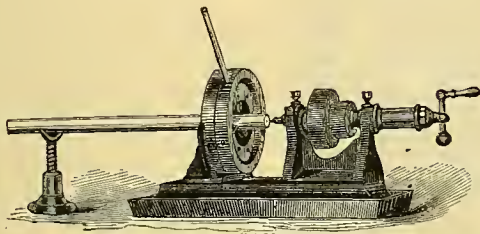


This machine runs seven taps, with three different speeds, and is so arranged that two of the taps may be run with the fastest, two with the slowest, and three at medium speed, at the same time—the gearing being so arranged as to enable the operator to get the desired speed for any given sized tap; or all may be run at any of the three speeds, if so desired, by having the necessary extra gears. By the substitution of the necessary gearing, which is easily done, three, two or one of the taps can be made to run “left hand.” It has a tight and loose pulley, to accommodate itself under a main line or counter line. The necessary oil is regularly supplied by graduating cocks, from a reservoir, in itself a source of economy.

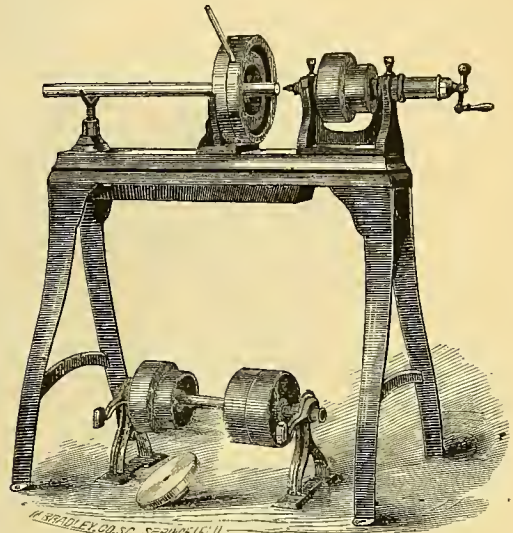
The No. 1 machine taps from $1\frac{1}{2}$ inch down to the smallest size. No. 2 taps from 2 inches down to the smallest size. No. 2 occupies the same space on the floor as No. 1; the difference is in the size of the gearing, which is heavier and stronger. The arrangement of this machine provides against any gumming or obstructions in the sockets resulting from chips, cuttings or oil. The sockets for holding the taps are so constructed that any tap will fit and work in or on any spindle, and the nuts, when finished, drop below the teeth of the tap, and when full the tap can be taken off and replaced without stopping the machine.

Wood and Iron Working Machinery.

Centering Machines.



No. 2.



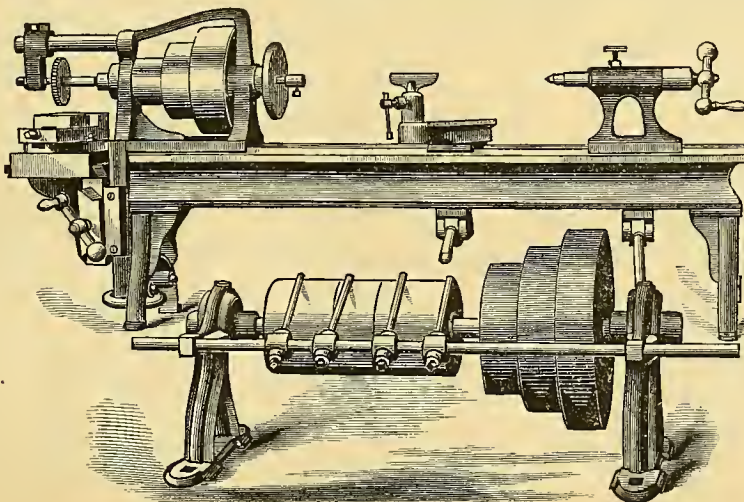
No. 3.

The No. 2 machine represented above will centre iron from one-fourth inch to four and one-half inches in diameter. It is set on a bed about two feet long, and the chuck is bolted to a separate stand, which is fitted to the bed, and can slide about eight inches, thus giving more or less room between the work and drill, as required. This is a very nice machine, and gives excellent satisfaction wherever used.

The No. 4 size is built in this style, and is a very large, heavy machine, with a capacity of from two to seven and one-half inches, and is adapted to centering car axles and other large work.

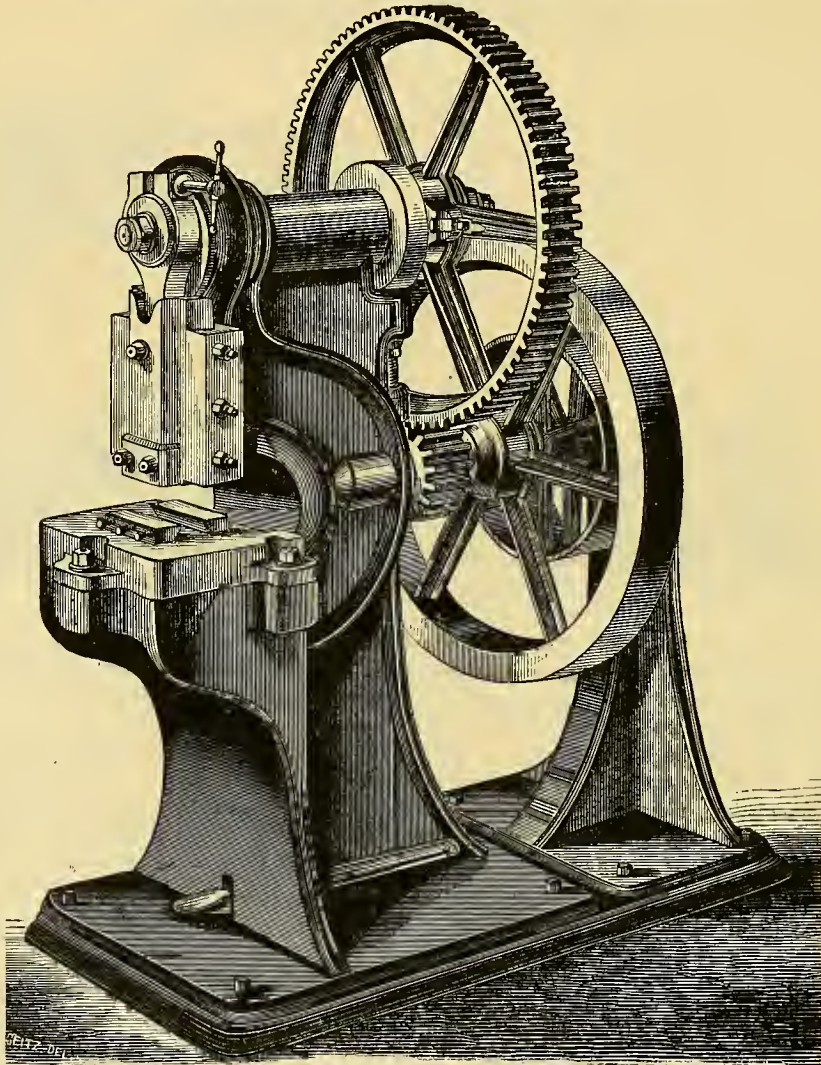
The No. 3 machine is larger than the No. 2, having a capacity of from one-fourth to five and one-half inches; it is set on a bed about three feet long, with iron legs; is furnished with counter and hangers complete, and is a perfect machine in itself. It is also supplied with a small table to hold in the chuck (shown on the floor in the cut) to rest small work on, thus making a horizontal drilling machine. The chuck can slide on the bed about twenty inches, giving ample room for any work required.

Milling Lathe.



Gear's Illustrated Catalogue of

Back-gear'd Power Press.



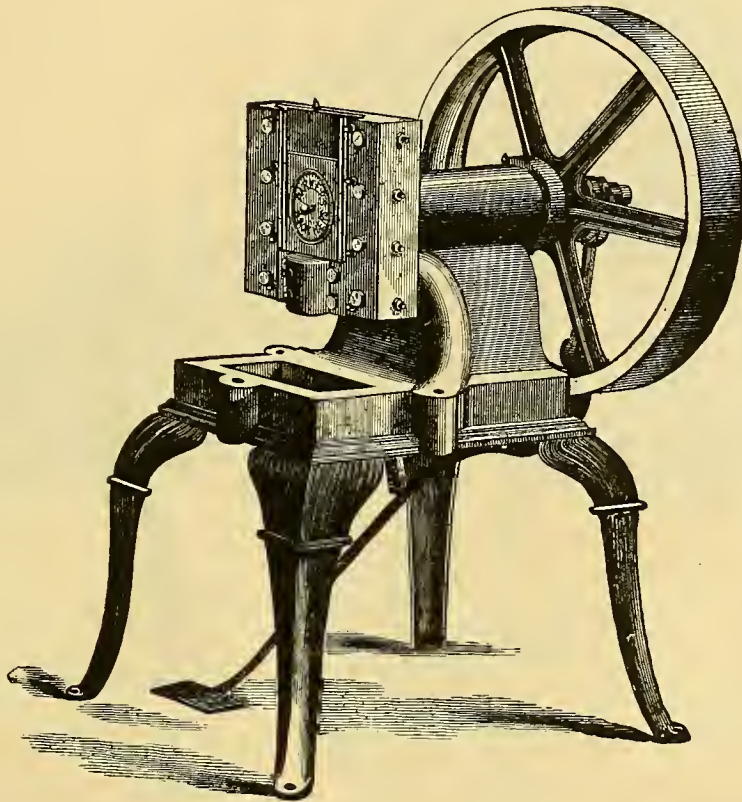
WITHOUT BACK GEAR.

WITH BACK GEAR, 4 TO 1.

Number,	1	2	3	3½	4	4½	5	3	4	5
Weight about (pounds),.....	600	1000	1700	1800	2800	3250	4500	2700	3800	6000
Size of opening in bed (inches),.....	4x6	5x8	7x10	10x10	9x12	14x20	11x14	7x10	9x12	11x14
Distance back from center of slide (inches),	4½	6	7½	9	9	12	10½	6½	7½	8½
Distance from end of slide to bed when } (inches),....	5	6	7	7	8	9	9	7	8	9
ring and slide are up,										
Motion or stroke of slide (inches),.....	1	1½	1½	2	1½	2	1½	1½	1½	1½
Adjustment of slide (inches),.....	1	1	1	1	1	1	1	1	1	1
Diameter of fly wheel (inches),.....	22	28	33	33	40	40	50	32	36	48
Weight of fly wheel (pounds),.....	125	225	400	400	650	650	1000	230	470	825
Diameter of pulley (inches),.....	22	28	33	33	40	40	50	16	20	24
Width of pulley (inches),.....	2½	3	3¼	3¼	4½	4½	5½	3¾	4½	5½
(Bed-peices and bolts, extra.)										

Wood & Iron Working Machinery.

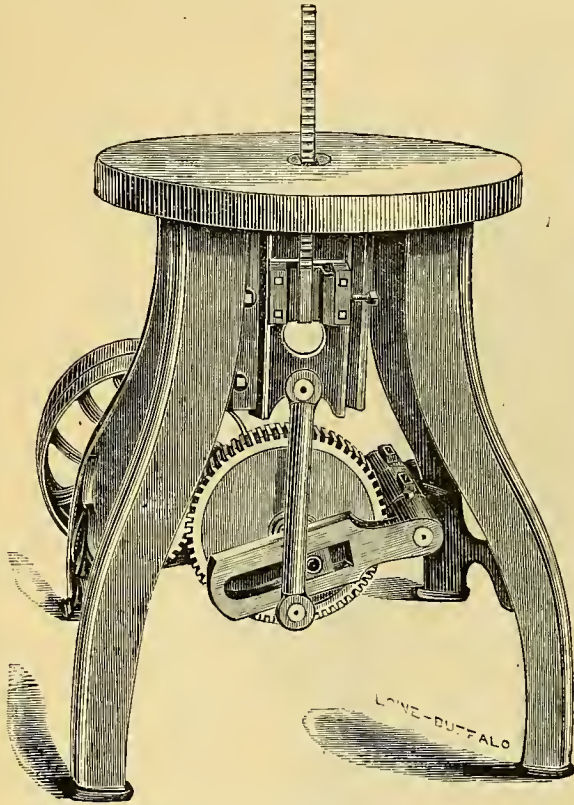
Power Press.



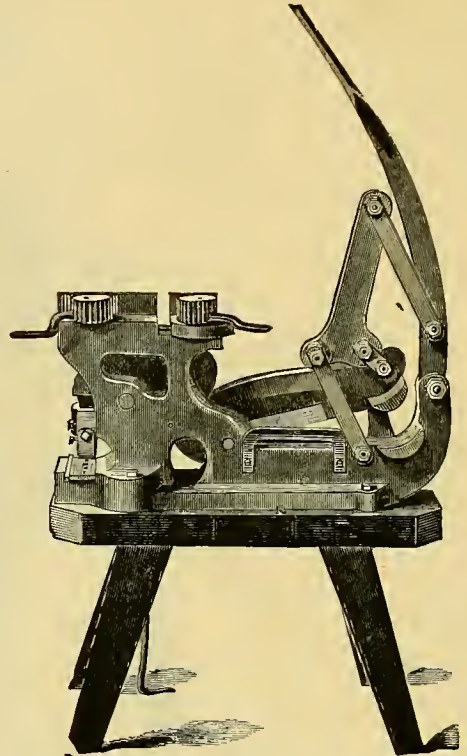
	WITHOUT BACK GEAR.									WITH BACK GEAR.				
	00	0	1	1½	2	2½	3	Tin- ners	Boil- er.	2	2½	3	5	Cut- lery.
Number,	00	0	1	1½	2	2½	3	Tin- ners	Boil- er.	2	2½	3	5	Cut- lery.
Weight about (pounds),	100	300	800	1200	1600	2300	3000	2300	2500	2800	3300	4300	12000	5500
Size of opening in bed (inches),	2x2	2x4	4x7	5x8	6x9	7x10	8x11	12di.	2x2	6x9	7x10	8x11	8x12	3x10
Distance back from center of slide (inches), ..	2½	3½	4¾	5	5½	6	6½	13	16½	5½	6	6½	8	6½
Motion or stroke of slide (inches),	¾	1	1¼	1½	1½	1¾	1¾	1½	1½	1½	1¾	1¾	2½	1¾
Adjustment of slide (inches),	½	½	½	¾	¾	¾	¾	¾	¾	¾	¾	¾	1	¾
Distance from end of slide to bed, } (inches), ..	4	4¾	5¾	6¾	7½	8	9	7½	7½	7½	8	9	8	
Diameter of fly wheel (inches),	15	21	27	32	36	42	48	36	48	32	36	42	60	48
Weight of fly wheel (pounds),	20	90	150	230	470	600	825	470	825	230	470	600	1000	825
Diameter of pulley (inches),	15	21	27	32	36	42	48	36	48	16	20	24	24	24
Width of pulley (inches),	2½	3	3¼	3¾	4½	5	5½	4½	5½	3¾	4½	5	8	5½

Bed pieces, bolts, counter- shafts and boxing, extra.

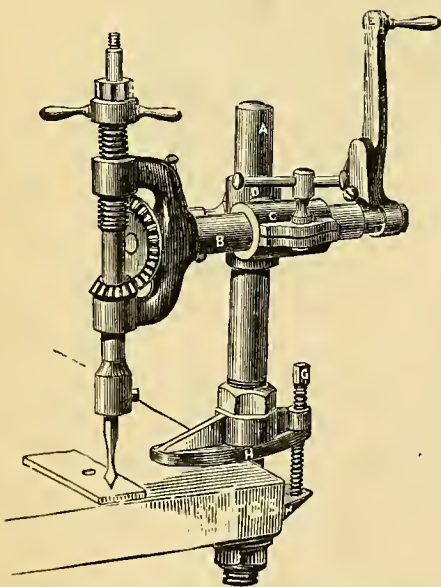
Gear's Illustrated Catalogue of



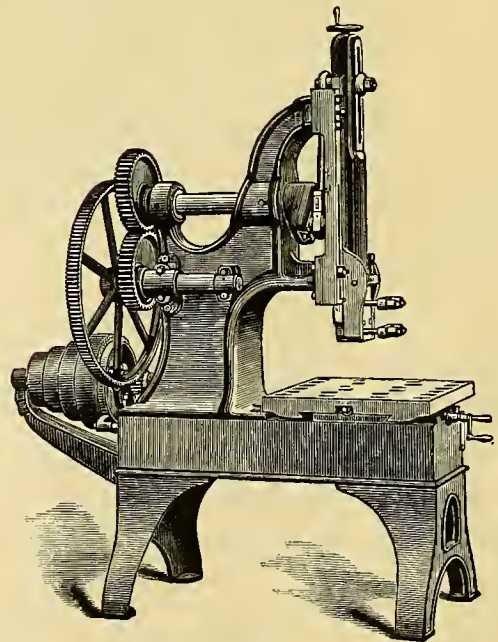
Key-Seat Cutting Machine.



Shear-Punch and Upsetter.



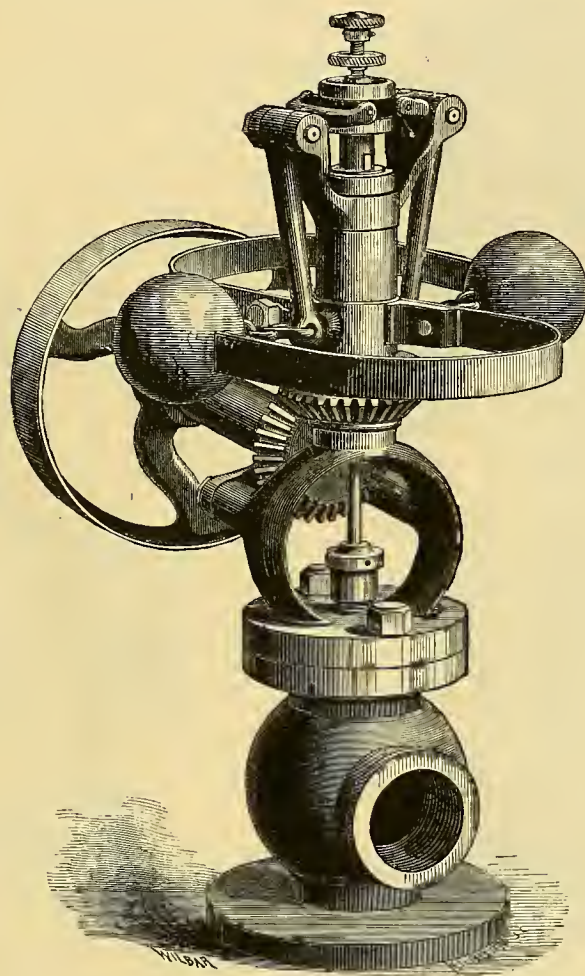
Angular and Ratchet Drilling Machine.



Splining or Slotting Machine.

Wood & Iron Working Machinery.

Patent Perfect Governor and Valve,



For Stationary Steam Engines.

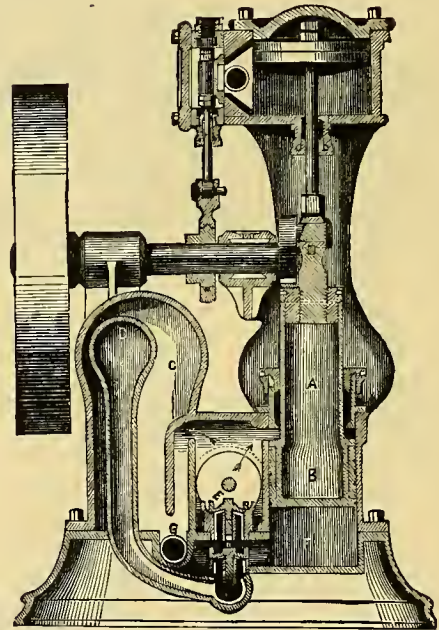
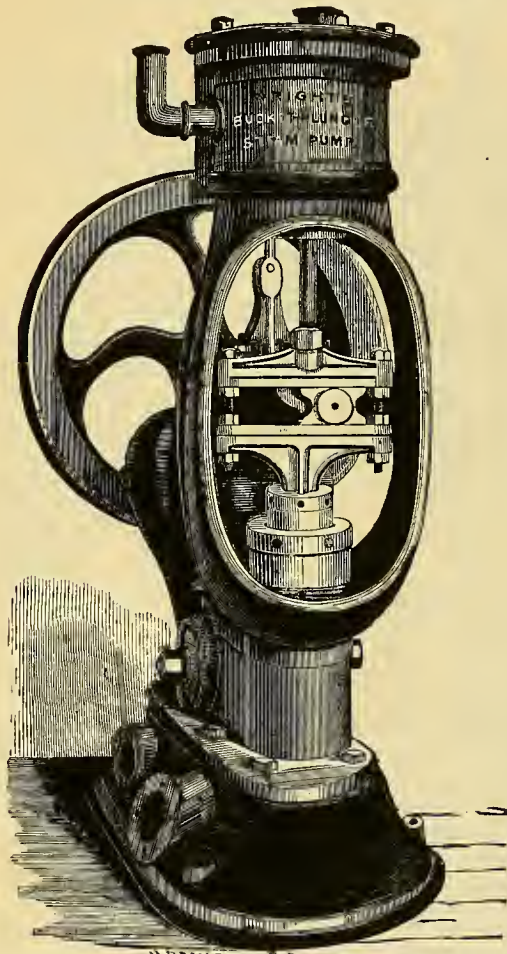
The particular invention in this Governor consists in relieving the joints of the weight of the balls, and the friction caused by rotating them; also, in dispensing with the gravity principle, as the balls do not rise and fall but always revolve on the same plane. As may be seen in the engraving, the balls are supported on bent steel springs, which also serve to rotate them, and throw them towards the center on the least decrease in speed. This arrangement secures great sensitiveness, and an extreme delicacy of motion. The speed of an engine may be instantly changed to any required degree, by simply turning the small hand-wheel seen on the valve-stem. The balls being very light, the Governor does not require much power to drive it, and it responds instantly to any change, however sudden or violent. These Governors may be run in any position, either vertical, horizontal, or inverted, but if wanted out of the usual position, they should be ordered specially.

Hardened Valves and Valve-Seats.

Long continued satisfactory action of a governor cannot ensue, unless that most vital part (the valve) retains its proper fit, and is proof against steam cuts, which causes the valve to become leaky and practically useless, so that an engine would act as well if it had no governor at all. The market is well supplied with cheap governors, with valves and seats of the softest description of cast iron, which in some localities will not bear use six months, and which will not last long in any place. Such governors are in reality the most expensive in the end, and eventually must be replaced by others. The valves and seats in this governor are all hardened, and will resist steam cut for a long time. The water in some localities requires composition valves and seats, which can be furnished, if ordered.

Gear's Illustrated Catalogue of

Bucket-Plunger Steam Pumps.



Sectional View.

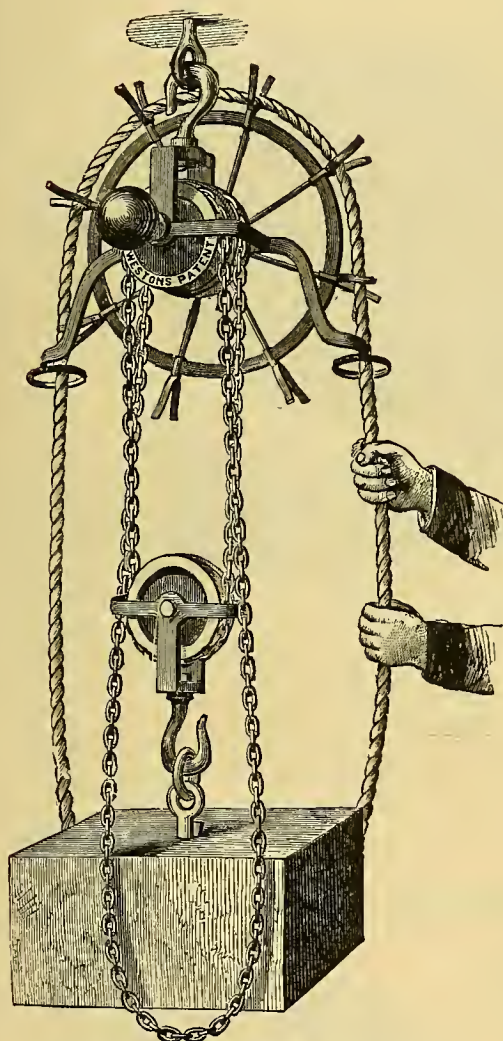
The operation of the pump above illustrated is as follows: The several chambers or passages being full of water, and the bucket, B, being at its upward stroke, the water through the lower or induction valve will, of course, have filled the water cylinder, F, while the water which had previously entered the pump cylinder above the upper surface of the bucket, B, was forced back through the valve chamber and out at the discharge, G,—this being only equal in quantity to one-half of that drawn in through the induction valve during the upward stroke of the pump-piston, owing to the reduced area of the upper annular face of the plunger as compared to the lower face of the latter. This water from above the pump-piston, or bucket, passing through the valve chamber, to the air-chamber, escapes therefrom to and through the outlet-pipe at the bottom. On the return or down stroke of the plunger, the water under the same in the pump cylinder is forced (the inlet valve closing) up through the outlet valve into the valve chamber, from which one-half of the water thus drawn in by the up stroke passes into the pump cylinder above the piston, while the other half is forced into and through the air chamber to the outlet pipe. It will thus be seen that the pump, although drawing in water only during its upward stroke, discharges it during both the up and down stroke, one-half of the entire quantity being expelled at each stroke. The following table gives the dimensions of the different sizes, etc.:

Numbers,.....	0	1	2	3	4	5	7	9
Diameter of steam cylinder, in inches,.....	4	5	5½	7	8	10	12	14
Diameter of pump cylinder, in inches,.....	2½	2¾	3½	4½	6	7	8	10
Capacity per revolutions, in gallons,.....	.04	.07	.10	.18	.49	.67	1.30	2.04
Boilers in horse-power they will supply,.....	15	25	40	80	150	200	400	600
Size of steam pipe, in inches,.....	¼	½	¾	1	1	1	1½	1½
“ exhaust pipe, “.....	½	¾	1	1	1½	1½	1½	2
“ suction pipe, “.....	1	1½	1½	2	2½	3½	5	6
“ discharge pipe, “.....	¾	1	1½	1½	2	2½	3	3
Length over all, in feet and inches,.....	1.3	1.6	1.10	2.1	2.5	2.10	3.6	4.6
Height over all, in feet and inches,.....	2.3	2.7	2.10	3.1	3.11	4.2	5.6	5.8
Width (diameter balance wheel),.....	1.2	1.4	1.5	1.10	2.3	2.8	3ft.	3.4
Weight of pump, in pounds,.....	145	245	320	490	840	1096	1850	2700

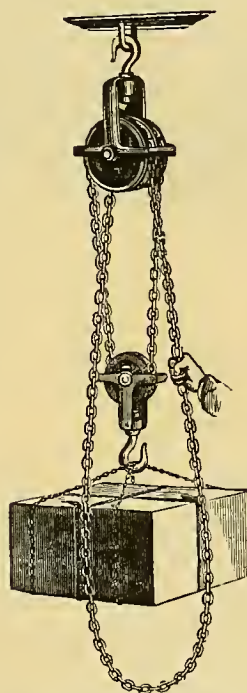
In ordering, please state what duty the pump is required to perform, giving size and length of supply and discharge pipes.

Wood & Iron Working Machinery.

Patent Differential Pulley Blocks.



No. 1, with Sprocket Wheel.



No. 2, without Sprocket Wheel.

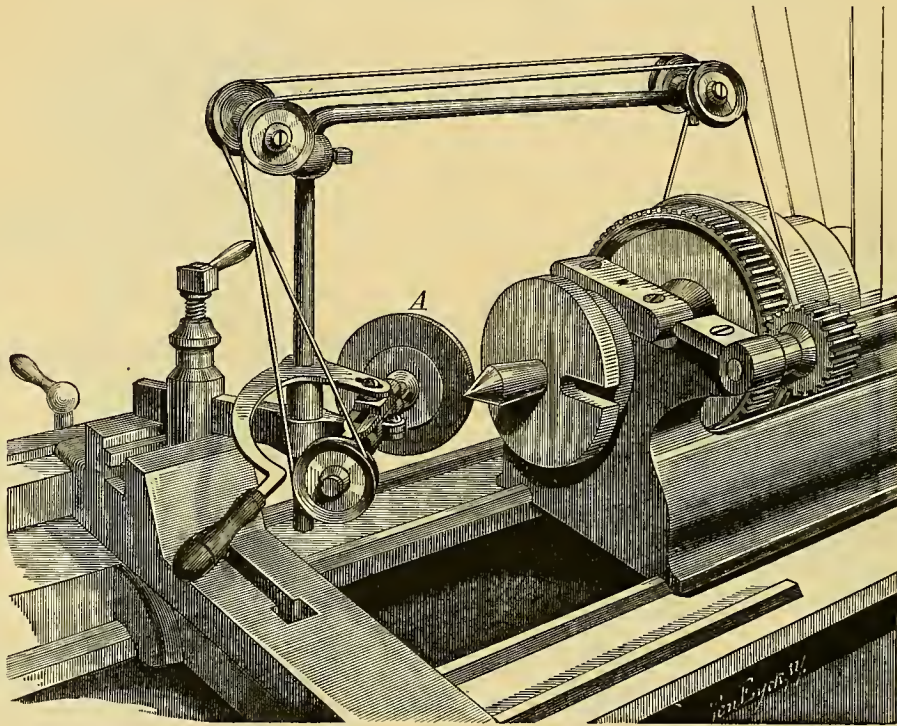


No. 3, without Sprocket Wheel.

The peculiar merit attached to these pulleys is, that while they are more powerful than ordinary pulley blocks, they also possess the novel and invaluable quality of not "running down," under any circumstances, while the load is suspended to them. Wherever weights have to be lifted, this hoisting tackle will be found to be invaluable. When worked from below by pulling the chain, about four times the length of lift is required.

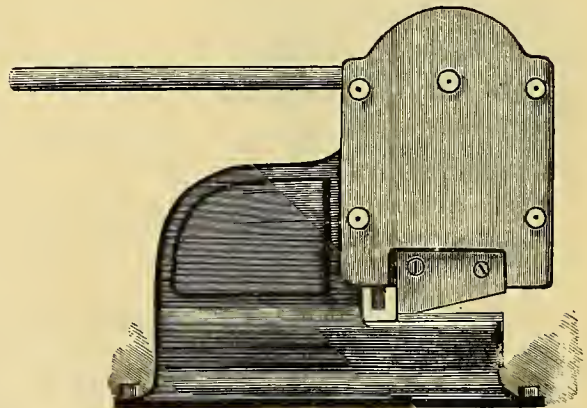
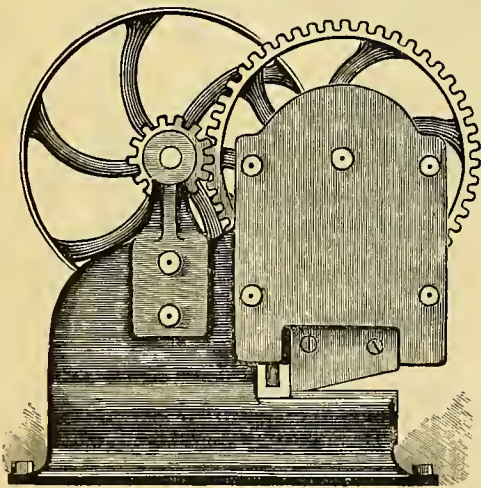
Gear's Illustrated Catalogue of

Attachment to an Engine Lathe,



For Grinding Centers.

Shearing and Punching Machine.

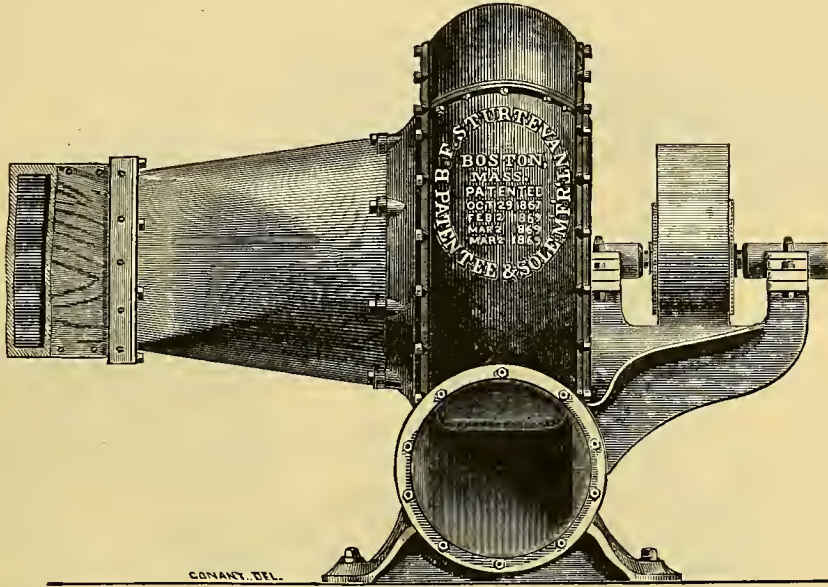


The above illustration represents a Shearing and Punching Machine. There are two sizes. The No. 1 machine will cut iron $\frac{1}{4}$ inch thick, will punch iron 3-16 inch thick, and cut round iron $\frac{3}{8}$ inch diameter. The No. 2 machine will cut iron $\frac{3}{8}$ inch thick, will punch iron $\frac{1}{4}$ inch thick, and will cut round iron, $\frac{5}{8}$ inch diameter.

SOME OF THE ADVANTAGES OF THIS MACHINE.—By removing the punch and bed piece, you can cut sheet iron any length or width you wish. It is a machine of great power in small compass. It can be attached to any bench where convenience may require. You get two machines combined, for the price of one.

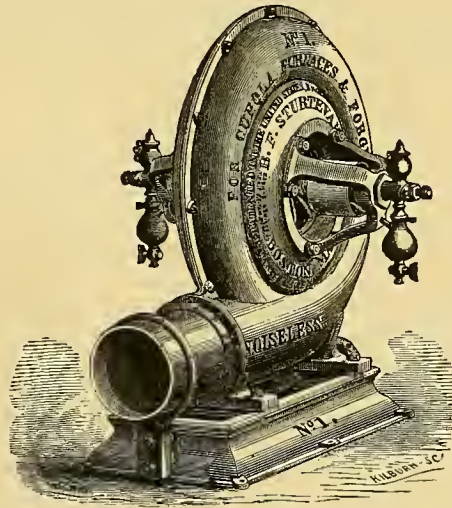
Wood & Iron Working Machinery.

Exhaust Fan,



For removing shavings from planing and moulding machines, saw-dust, and dust from sand wheels, such as are used for polishing lasts, carriage spokes, shoe bottoms, felt hats, &c., and emery wheels for polishing all kinds of hardware; smoke and gas from smoky smiths' shops and manufacturing establishments and chemical works; steam and vapor arising from paper machines and all drying cylinders and dry-rooms; also, sweat from mill stones, offensive odors from try-kettles and dyeing establishments; dust from rag and cotton pickers, flax and rope machinery, and for ventilation of coal mines and all under-ground apartments or cellars.

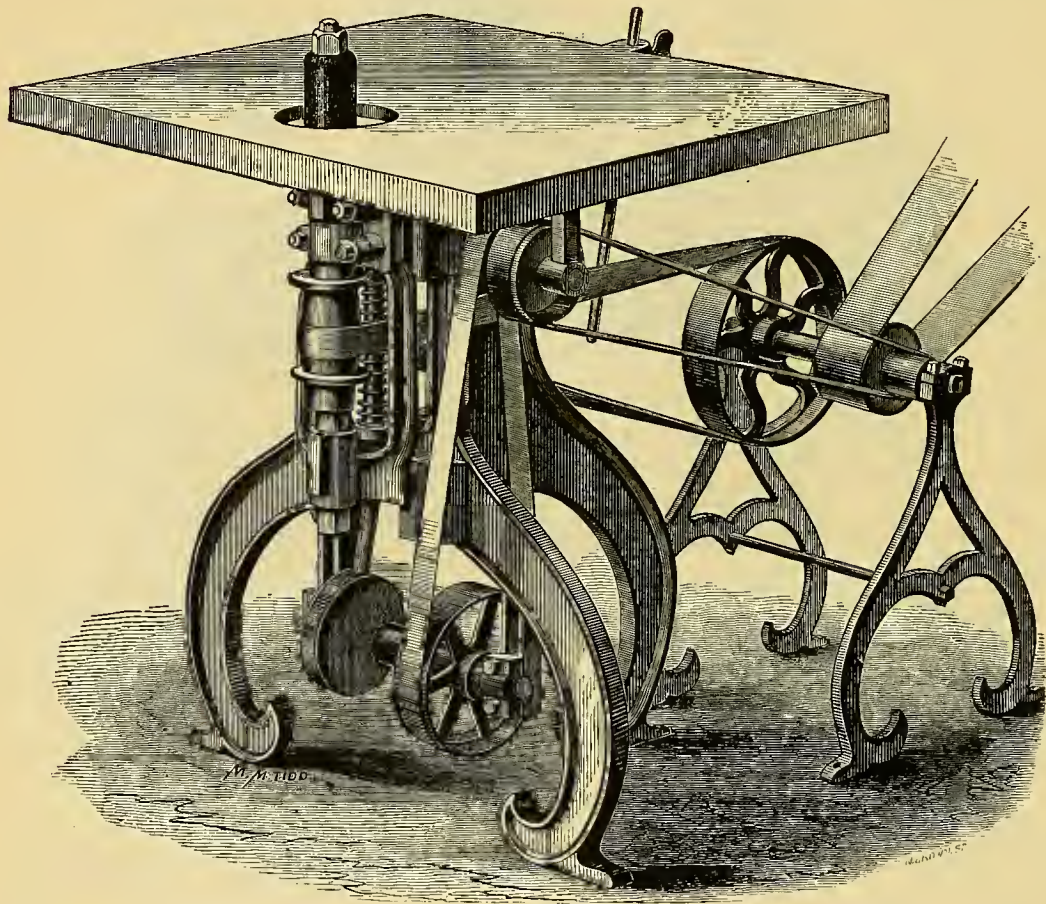
Patent Improved Steel Pressure Blower,



For Cupola Furnaces and Forges.

Gear's Illustrated Catalogue of

Gear's Universal Emery Grinding Machine,



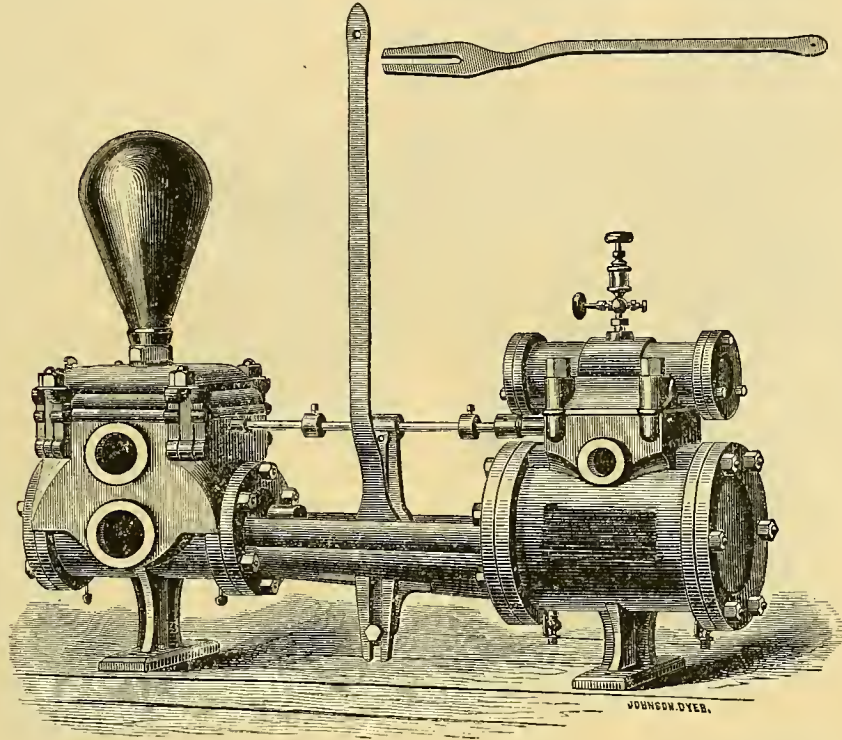
For Grinding, Shaping and Finishing Straight, Irregular, Moulded and Beveled Iron Work
with the use of Emery Wheels.

PATENTED APRIL 23, 1872.

This new and useful machine we have constructed and now offer to the manufacturers of this country, knowing that there was need of some method for forming and finishing moulded and plain, irregular and straight iron work. How far we have succeeded we are willing to let the manufacturers say. But that we have them in use where they would not dispense with them if prevented from obtaining another *we do know*. The machine is simple and somewhat different from all other grinders. With its reciprocating and rotating motion combined, it cuts much more rapidly, and has in that the *true principle* of a drawing or shearing cut. This principle, whether applied to sharpen the cutting edges of planer knives on grindstones, or cutting with keen edges of a file or emery wheel, all mechanics will understand. The table and spindle are adjustable and can be set to accommodate any angle or bevel. Stove foundries and machinists should have this machine. We want you to have one. We know you will be pleased with it, and that you ought not and cannot profitably dispense with its use. Shall we be favored with your order? Will you please look into the matter and see how much can be saved by having one? Think of the almost endless variety of work that you can do on it, and how much it will enable you to reduce your expense for files and labor. Remember, "it is not what we *make*, but what we *save*, that makes us rich."

Wood & Iron Working Machinery.

Steam Pump for Feeding Boilers,



Of Forcing Water under Heavy Pressure, with Hand Power Attachment from No. 0 to No. 6.

There is no longer any question as to the most economical manner of feeding boilers. It is to supply a steady flow, equaling exactly the evaporation. A pump capable of supplying one hundred horse-power boilers may be run so slowly as to supply the exact quantity of water evaporated by a one-horse boiler. Practical engineers will appreciate this feature. These pumps are arranged in two different styles, one for cold water, the other for hot water. When both hot and cold water are to be used, order the hot water pump.

Number,.....	0	1	2	3	4	5	6	7	8	9	10	11	12
Diameter of steam cylinder,.....	3½	4	4	5½	6	7¼	8	10	12	14	16	18	20
Diameter of water cylinder,.....	2½	2½	2½	3¼	3¾	4½	5	6	7	8	9	12	14
Stroke,.....	3	3½	5	7	7	10	10	12	12	12	18	24	24
Gallons per stroke,.....	0.046	0.074	0.106	0.251	0.334	0.688	0.850	1.468	1.953	2.611	4.957	11.740	15.990
Strokes per minute..... 1 to	400	400	350	300	300	250	250	200	200	200	150	100	100
Steam pipe,	¾	1	1½	2	2½	3	3	4	4	5	6	8	10
Exhaust pipe,.....	½	¾	1	1½	2	2½	3	3	4	5	6	8	10
Suction pipe,.....	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10
Discharge pipe,.....	½	¾	1	1¼	1½	2	2½	3	3	3½	4	6	8

Larger sizes of various proportions of steam to water cylinder, and of any desired capacity, to order. When ordering a pump, please answer the following questions. 1—To what service is it applied? 2—The quality of the liquid to be pumped—whether salt, fresh, acid, clear or gritty, and is it to be pumped cold or hot? 3—To what height is it to be lifted by suction, and what is the length of the suction pipe? 4—To what height, or against what pressure, is the water to be forced? 5—What is the greatest quantity of water needed per hour? 6—What pressure of steam is used? For brass pumps, the difference is in the cost of metal extra.

The utility of a pump with Hand Power Attachment will be seen at once, as the pump can be used, when steam is down, for filling boilers, washing decks, fire purposes, and to do general pumping. When the pump is being operated by steam, the hand lever can be removed simply by lifting it from the pin on which the fork rests. Each pump has suction and delivery openings on both sides—this makes it very convenient, as connections can be made on either side of the pump desired.

Gear's Illustrated Catalogue of

Patent Lever Dynamometers.

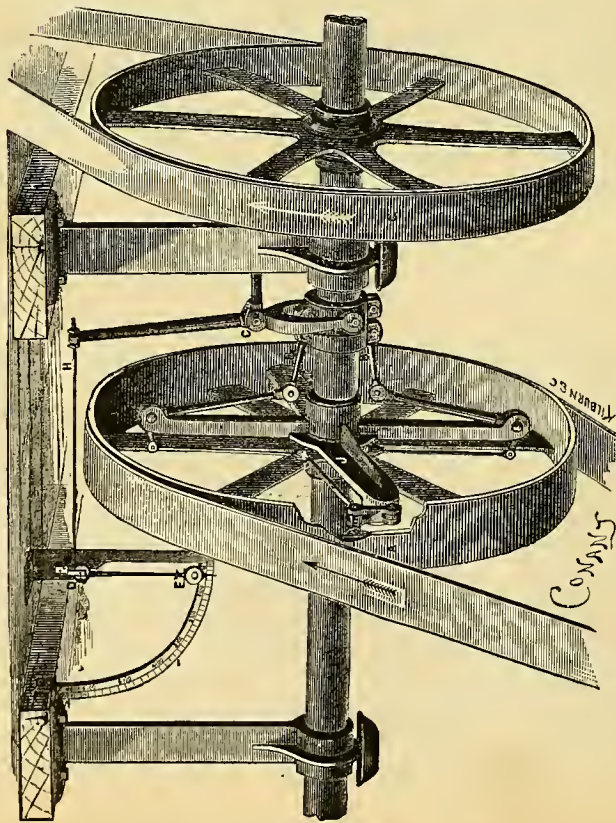


Figure 1.

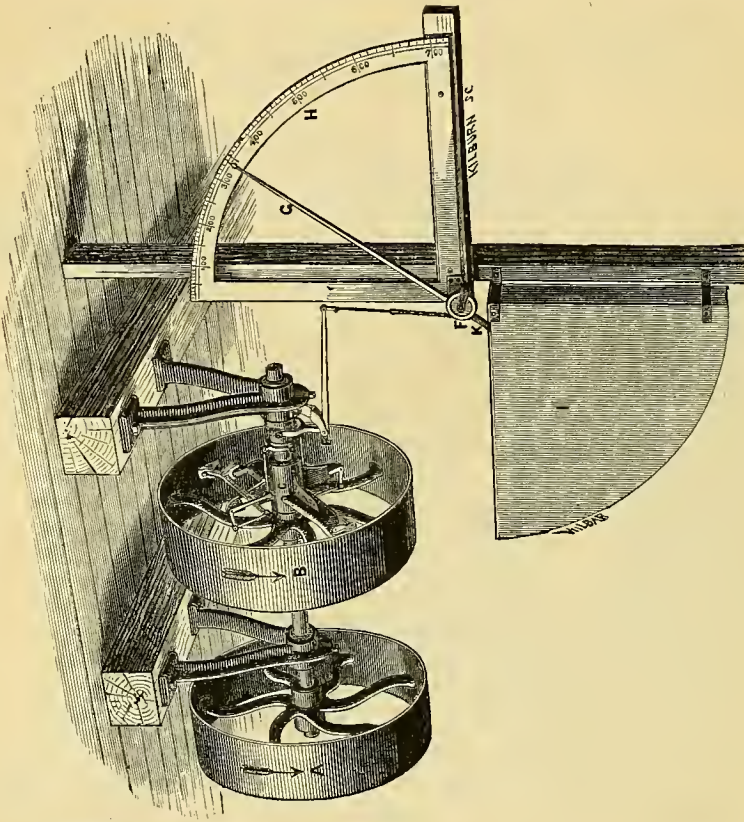


Figure 2.

The object of a Dynamometer is to measure power, as its name denotes. Mechanical power is as much an article of commerce as any material or appliance for our necessities and comfort; but while everything that is bought and sold (except power) is accurately weighed, gauged, or measured, the amount of operative force or power has been for years left to shrewd guesses or rough calculations. Of course, all such guesses, conjectures, and even calculations, are so at variance with the notions of different individuals, that they are rarely satisfactory and never absolutely correct. The machines represented on this and the following page completely obviate all these difficulties. They actually weigh all the transmitted power, whether sent through the medium of a fall or pressure of water, the action of a steam engine, through shafting or belts or gearing, so that the power transmitted may be ascertained to a nicety. It can be tested by the sealed weights, held in trust by all city and town authorities, as readily as can a Fairbanks scale. In fact it is built on the same principle of gravitation or weight. The invention is a simple machine, having no springs liable to be affected by the changes of temperature or the extremes of tension, but is simply a weighing machine like a platform scale. [For description, see next page.]

Patent Lever Dynamometers.

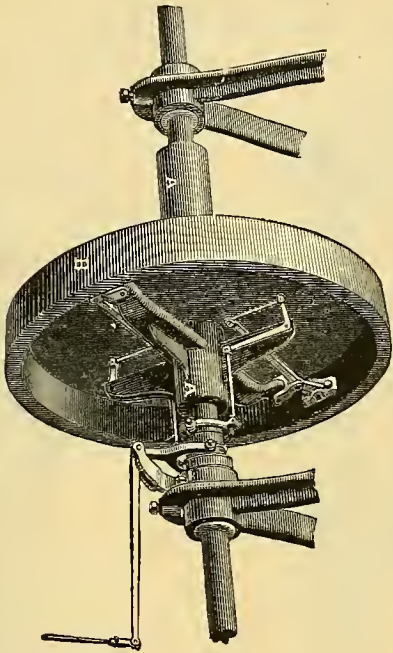


Figure 3.

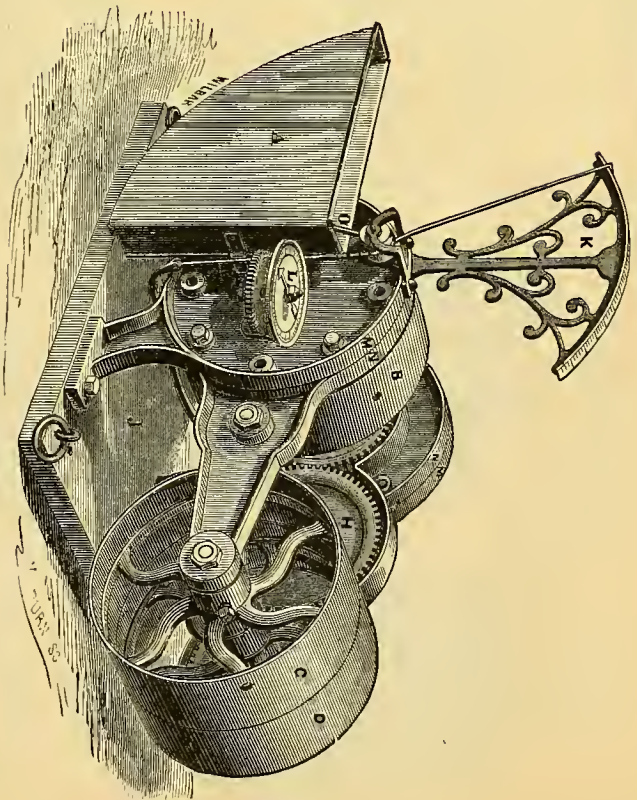


Figure 4.

Figure 1 (p. 122) represents a permanently attached power measurer. The pulley, A, is loose on the shaft, and receives the power. Its connection with the shaft is made by means of a wheel (the spider, J), keyed or screwed firmly to the shaft in close contiguity with the receiving pulley—its hub, in fact, forming one of the guides to the position of the pulley on the shaft. To connect this fixed wheel with the loose receiving pulley, a bell crank lever is pivoted into projecting ears on the rim of the wheel on opposite sides, the long arm of which connects with an annular slotted collar on the shaft by means of the short bars, B. The short arms of the bell crank levers connect on the inside of the fixed wheel with two radial bars, one parallel to the outer arm of the bell crank, and the other at right angles to it, receiving, near its upper end, a pivot passing through a swivel hung to the rim of the wheel, and having its extreme end pivoted to a stud fixed on the inner side of the rim of the receiving pulley. The strain of the power received through the belt on A, necessarily reacts on the levers, and through them, on the fixed wheel, which may be considered nothing more nor less than a support to these levers in sustaining them in position to connect the loose receiving pulley with the shaft. At B, the levers are connected by pivots with the sliding collar, in the annular groove of which is seated a strap with which is connected a forked lever, the fulcrum at C. To the end of the long arm of this lever, a rod, with a short section of machine chain, is attached. The chain runs over the cylindrical head, D, of a pendulum weight, E, having a pointer that traverses a fixed quadrant, F, properly divided by a scale to denote the relative pressure exerted through the medium of the receiving pulley on the shaft. The pulley, G, is fixed to the shaft, and delivers the power. The permanent dynamometer can be made to test any amount of power, and can be adjusted to all sizes of pulleys.

Figure 2 (p. 122) represents a Portable or Stationary Dynamometer, which can be changed from place to place, suspended from the ceiling, inverted and placed on the floor, or attached to the end of a shaft, using pulley, B, as a driving pulley. This dynamometer is made in three sizes, testing from 5 to 50 horse-power.

Figure 3 represents a Dynamometer applied at the coupling of a shaft. It is placed at the joint in the shaft, and the coupling removed. They can be fitted to any size of shafting and can be made to test any amount of power.

Figure 4 represents a Portable Dynamometer, which are made of different sizes. They are useful for testing pickers, looms, spinning frames, or any kind of machinery, by being placed between the machine and motor, connected by belts on its pulleys.

Gear's Illustrated Catalogue of

Water Gauges.

Lane's Low Water and Alarm Gauges.



No. 2, Globe or Valve Pattern. No. 2, Cock Pattern.

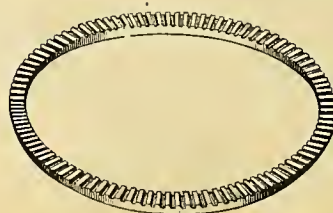
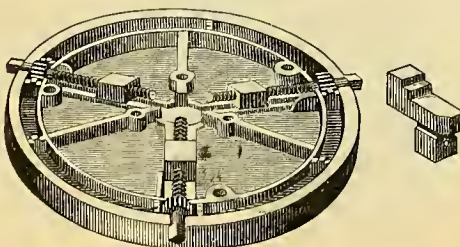
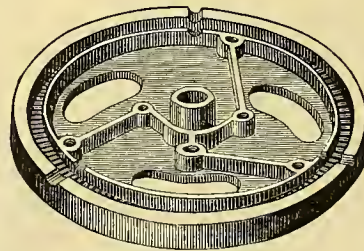
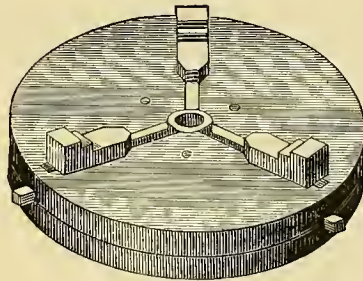


Column Gauge.



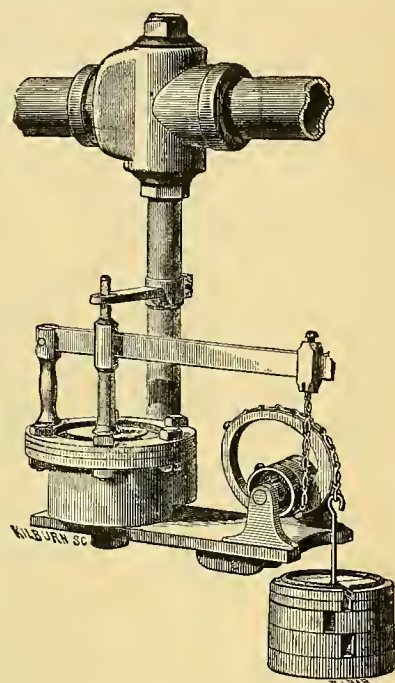
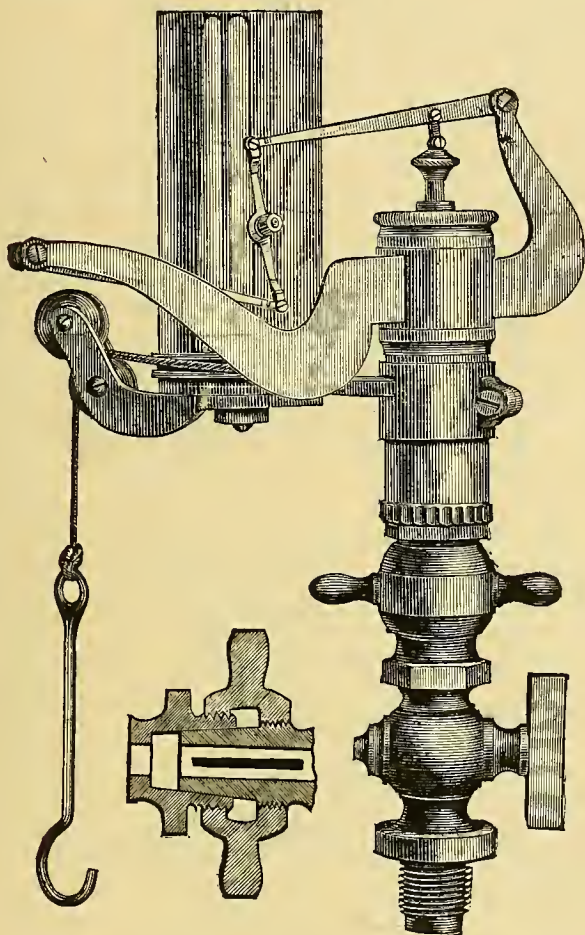
Cylinder Gauge.

Patent Geared Scroll Chuck.



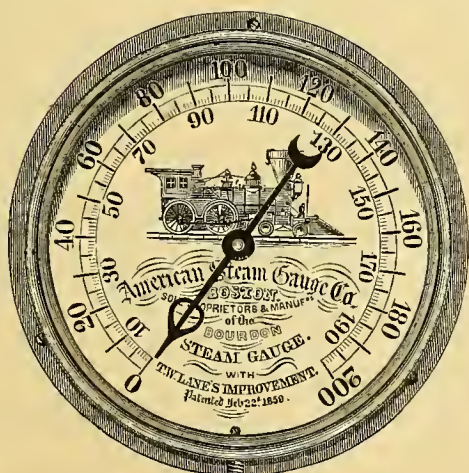
Wood & Iron Working Machinery.

Parallel Motion Indicator. Improved Steam Pressure Regulator.

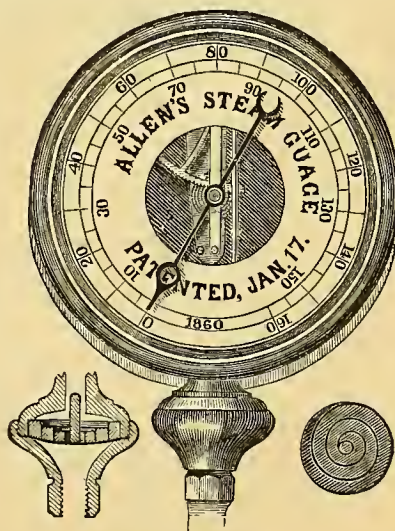


This regulator is designed to reduce and control the pressure of steam as used for various purposes in manufacturing and steam-heating, and is claimed to be especially adapted to paper dryers, English can-dryers, slashers, &c., and is being adopted and approved wherever it is desirable to regulate the pressure of steam.

Steam Gauges.



Bourdon, with Lane's Improvement.

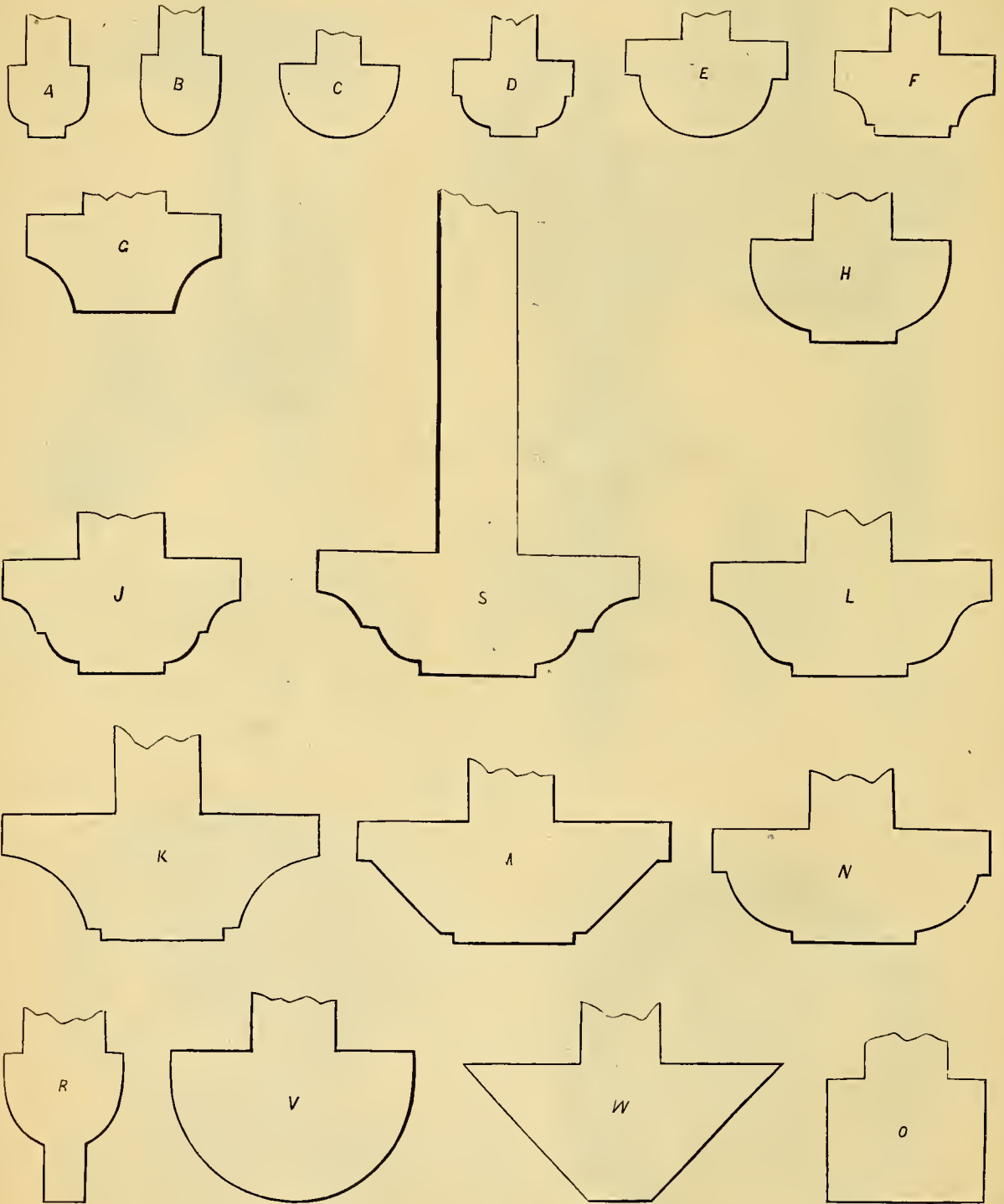


The Allen Gauge.

The principle of the "Allen's Patent" Steam Gauge is perfectly simple, and entirely free from the objections which exist in every other *protected* Spring Gauge in use. The steam acts upon a tapered volute, or coiled steel spring, which is protected by an elastic diaphragm from a direct contact with the steam.

Gear's Illustrated Catalogue of

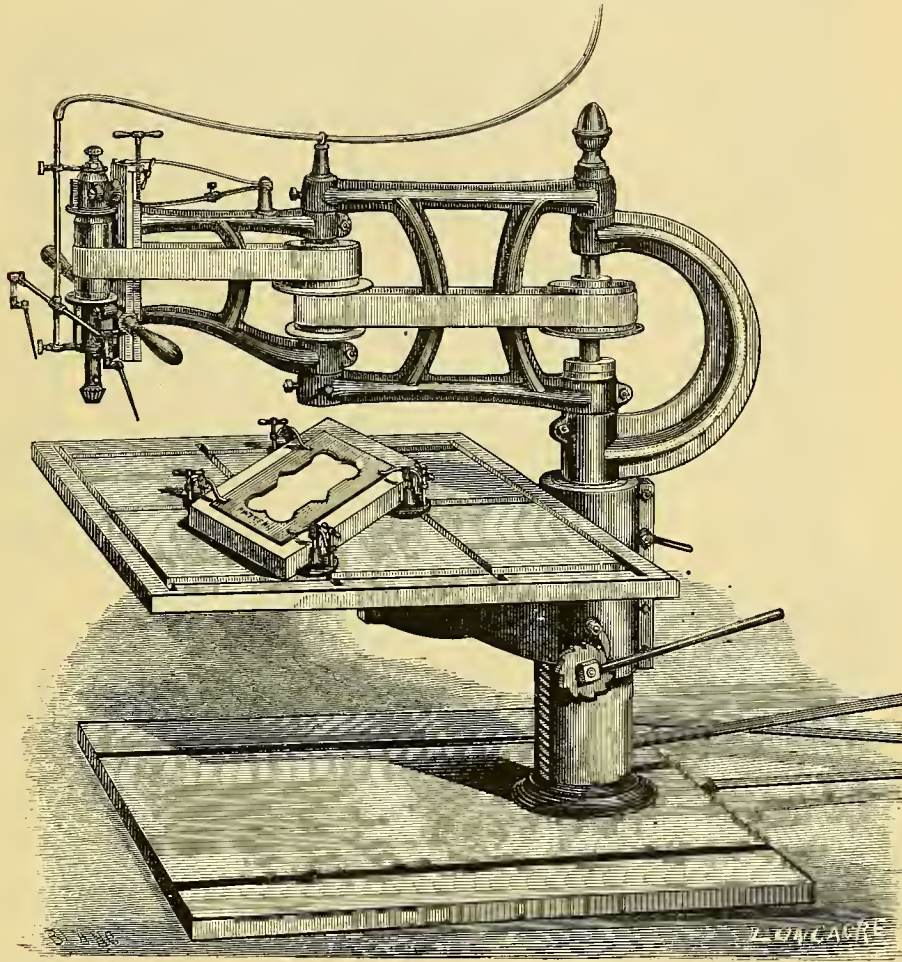
Cutters for Gear's New Machine



For Paneling, Moulding, Boring, Carving, &c.

Wood and Iron Working Machinery.

The Gear Stone Machine,



For Surfacing, making Straight and Irregular Mouldings upon the Face and Edge; Paneling, Lettering, Turning and Carving Granite, Marble, Sandstone, Slate, &c.

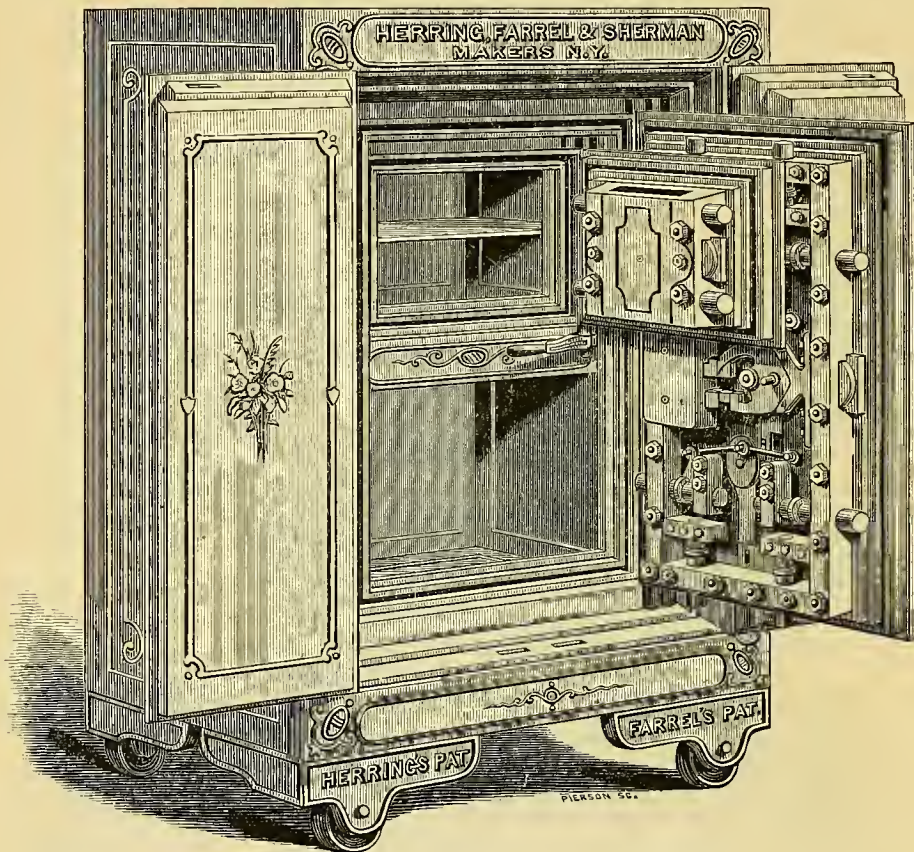
FACTS THAT CANNOT BE DENIED.

Work can be done in one minute on this machine that will take three hours for one person to do by hand. Calculating labor at forty cents an hour, one machine will earn in one minute \$1.20; in one hour, \$72.00; in one day, \$720.00, which is equal to the work of one hundred and eighty men at \$4.00 per day. Let us deduct from the above number thirty men for changes, and we then have one hundred and fifty men's work per day. Now to get below the possibility of a doubt, let us reduce the number two-thirds more—one hundred men's labor less—fifty men's work: Fifty men's work for one day, at \$4.00 per day, will amount to \$200.00; for one week, \$1,200.00; for one year, \$60,000.00 Granite can be dressed, moulded and ornamented at an expense of 25 cents per foot, in a manner much superior to the present style of hand-dressing, which costs from \$5.00 to \$6.00 per foot.

Address A. S. GEAR, General Agent for the Gear Stone Machine Company, 56 to 62 Sudbury Street, Boston, Mass.

Herrig's Illustrated Catalogue.

Herring's Patent Champion Fire and Burglar Safes.



Proof against the Blow-pipe as well as the Drill.

The most effective tools in the hands of burglars are wedges, nitro-glycerine and gun-powder. The first opens the joints or cracks to admit the latter, and when this is effected the rest is easily accomplished. There are but few safes now made that really give protection against these powerful agents. It is claimed, however, that the Improved Patent Tongue and Groove Lever-hinged Banker's Chest, with packed air-tight joints and flanges, affords this protection; and with the combination of patent "high and low steel steel" welded (Bessemer and chrome cast steel, more than double the strength of welded steel and iron) with the patent Franklinite or Spiegel-Eisen, gives security against the blow-pipe, as well as the drill. These bank safes are made with solid welded angle frames outside, with smooth exterior, and present no cracks or joints that can be affected by the wedge. All the corners are solid, and no joint extends through the chest.

In the safe represented above a strong tongue is fixed all around the door, projecting from its inner surface. A similar tongue is made on the jamb of the safe against which the door closes, and is made to fit inside of the tongue projecting from the inside surface of the door, so as to form a groove or channel all round the doorway to receive the projecting tongue on the door; so that, when the door is closed with the patent hinge, it keys the whole structure, and the sides cannot be made to spring or bulge from the edges of the door, by driving in wedges, or the use of screw-power. In these grooves are placed a Patent Rubber Packing, making an air-tight joint, which prevents the introduction of any liquid combustible, as well as fine powder. Not one of these first-class Banker's Chests have as yet been robbed by burglars, though more are in use, and more have resisted the attempts made upon them, than any other kind. As a drill-proof resistant, they now stand the test better than any combination of materials yet invented, and the manufacturers challenge all competitors, in the sum of one thousand dollars, to produce a safe that will resist the drill and blow-pipe one-half the length of time that our Patent Combination will. With present improvements these safes ensure protection against wedging and sledging, drilling and blowing, and burglars' tools generally, to an extent heretofore unknown. No safes not protected by these modern improvements against wedging are trustworthy.

AS A FIRE-PROOF SAFE the Herring Safe has not only maintained its position in the FRONT RANK, but recent fires have shown it to be very far in advance of all others. In the Chicago fire there were *one hundred and forty-nine* of these safes, and the contents of them all were preserved, and in the Portland and Boston fires there was not a single failure. The patents of S. C. Herring of May 18, 1852, improved and renewed May 18, 1866, and of John Farrel, February 7, 1865, are claimed to produce the most perfect and complete dry safe, for protection against fire, ever offered to the public. Send for circular and prices.

Please Read Our Record.

The machinery I purchased of you in fitting out the Boston and Albany Car Shops, at Allston, Mass., is giving perfect satisfaction, and I am pleased to recommend all persons desirous of purchasing the best and latest improved Wood and Iron Working Machinery to your house, feeling confident that they will do better, as regards quality and price, than they can in purchasing of manufacturers. A large assortment, collected from all parts of the country, can be seen always at your warerooms.—*W. E. Chamberlain, Master Car Builder, B. & A. R. R. Car Shops, Allston, Mass.*

I beg leave to say that Mr. Chamberlain has charge of our car shops, at Allston, and in my judgment his recommendation is entitled to great confidence and respect.—*A. Firth, Asst. Supt. B. & A. R. R.*

We have given your improved Jig Saw a thorough trial, and find that it is all you recommended. It saws very rapidly, doing its work well, and runs quietly, without jarring, or shaking the building. We cheerfully recommend it as the very best Jig Saw we have ever seen.—*Dutton & Campbell, Fisherville, N. H., Manufacturer of Furniture Carvings.*

The machines we bought of you give us entire satisfaction. You will remember we made it a specialty in a Planer that it should plane very thin stuff rapidly and well. The first piece planed—a piece of hickory elm, very tough and grain-wavy or interlocked—I planed down to one-half inch in thickness, leaving it perfect every way.—*Wabash Valley Manufacturing Co., Antioch, Ind.*

The machines bought from you give us entire satisfaction.—*Dixen & Johnson, Savannah, Ga.*

We have used your Jig Saw for two months, and like it well. It gives us good satisfaction, and we think it all you recommend.—*Clark & Giddings, Peabody, Mass.*

The machinery I have had of you gives entire satisfaction. I am satisfied that no one can do business successfully without the best of machinery, such as may be obtained at your warerooms.—*C. H. Smart, Centre Ossipee, N. H.*

I have a Tenoning Machine which I purchased of you. It is the best tenoning machine I ever used. It does its work clean, and smooth, and after being adjusted, is always in place. In fact, it gives perfect satisfaction in every respect.—*M. W. Collins, Enfield, N. H.*

I have been using one of your Variety Moulding Machines for more than five years. It has never failed to give perfect satisfaction. I am much pleased with the Jig Saw that I bought of you last winter, and would not exchange it for any other that I have ever seen.—*M. C. Wadsworth, Gardiner, Me.*

The machinery which we purchased of your house is working nicely, and gives entire satisfaction. We shall be happy to recommend your house to all who wish to purchase machinery or supplies.—*Amidon Manufacturing Co., Miller's Falls, Mass.*

Your machinery gives good satisfaction, and we shall take pleasure in recommending all in want of first-class machinery of any description to visit your warerooms.—*Cushing & Southworth, Stoughton, Mass.*

We wish to say to you that we are perfectly satisfied with the machinery purchased of you, and price, the price being as low, and in some cases, lower, than we get from manufacturers themselves, and we are glad to know there is a place where any one can get all kinds of machinery made, without the trouble of looking up manufacturers when they are at a distance; and we would cheerfully recommend any one wanting machinery to call at your house for prompt and satisfactory attention.—*E. & J. C. Barnes & Co., Plymouth, Mass.*

After visiting manufacturers and obtaining their terms and prices, we found it every way to our interest to purchase of you. Your acknowledged mechanical skill, your independent position in regard to different makers, your judgment as to the best machine for the purpose required, the great convenience of finding all first class machines, side by side, where their respective merits could be accurately compared, and your kindness, have given us abundant confidence to send you our thanks and our commendation.—*Porter Blanchard's Sons, Concord, N. H.*

The Jig Saw we purchased of you gives entire satisfaction. We are much pleased with its operation, and take pride in showing it to others.—*Nourse, White & Co., Westboro, Mass., Manufacturers of Garden and Veranda Trellises, &c.*

The Balanced Jig Saw, and other machinery we purchased of you last Spring, meets our expectations in every respect, and we are very much pleased with it.—*Ashton & Butman, Taunton, Mass.*

We find the machinery purchased from your house gives entire satisfaction.—*James Griffith and Son, Cincinnati, Ohio.*

The machinery furnished by you, works to our entire satisfaction, and it gives me pleasure to say, that I think your house is just the kind of an institution that the community require, and ought to encourage and sustain.—*Lewis C. Tower, Gloucester, Mass.*

The Planer (30 inch knives) sold us by you, gives perfect satisfaction, doing its work better than anticipated, and it gives us great pleasure to say that all the machinery which we bought of you fully meets our expectations. You may rely on our custom whenever in need of any thing in your line.—*C. F. Packard & Co., Waldoboro, Me.*

Having had considerable dealing with your house, I cheerfully testify to your general promptness and honorable business management.—*Weetmoe Mills, Fall River, Mass.*

We are very much pleased with your Variety Machine sent us some months ago. We appreciate your house, where manufacturers can obtain all sorts of machinery with little trouble.—*Larkins & Bishop, Manufacturers and Dealers in Lumber, New Haven, Conn.*

We take pleasure in saying that in all the dealings we have had with you, you have acted in a strictly honorable way. The machines furnished us have been all you have represented, and when we have need of other machinery, shall not fail to apply to you to procure it for us. We believe your way of selecting from different makers their best machines is the only true way to supply a shop with first class machinery.—*Jno. Safford & Sons, Morrisville, Vt.*

We think the peculiar feature of your house (that is, of being able to supply any one with any kind of a machine) a great advantage to all who wish to purchase machinery of any kind.—*Rolfe, Tyler & Co., Commission Lumber Merchants, Burlington, Vt.*

We have a Planer from your establishment which gives us satisfaction.—*John K. Rogers, Agent, Boston Type Foundry, Boston, Mass.*

The different machines you have furnished the consolidated Wax Thread Sewing Machine Company, during the past year, have given entire satisfaction, and we take pleasure in recommending your house to all parties desiring machinery of any kind.—*L. H. Straw, Treas., W. T. S. M. Co., Boston, Mass.*

All the machinery and supplies purchased of you give us perfect satisfaction.—*C. L. Taft, Manufacturer and Builder, Fitzwilliam, N. H.*

With your Dovetailing Machine I have reduced the cost of drawer cases and the like, 20 per cent., giving at the same time a neater and much stronger job. Until you established your ware-rooms in Sudbury Street, there has been no way for one to arrive at the merits of the machinery manufactured by different houses, except to go to the different shops, which oftentimes would involve considerable expense.—*J. C. Hosmer, Foreman J. A. Robertson's Mill, Boston, Mass.*

I cordially recommend your services and manner of furnishing the best machinery produced, regardless of its maker, as VALUABLE, and every way worthy the consideration of all purchasers.—*M. C. Andrews, M. M. Car Department, N. Y. and N. H. R. R. Co., New Haven, Conn.*

The character of the machinery your house has furnished to this Company, in all respects, has given complete satisfaction, and the Moulding, Paneling, Carving and Dovetailing Machine is justly regarded as a most remarkable invention.—*J. R. Watson, Purchasing and General Supply Agent, Central Pacific R. R.*

Being in want of a machine for planing wood to a perfect even thickness, for the purpose of mounting our electrotype plates, we applied to you, and in your Wood Planer we found just what we wanted. We consider that it has more than paid for itself in the six months we have used it, and it has given us the greatest satisfaction.—*Stark, Stanley & Co., Electrotypers, Boston, Mass.*

This Company has one of your Paneling, Dovetailing, Carving and Boring Machines, and it is with pleasure that I inform you that it gives complete satisfaction, performing the work in No. 1 order and with great dispatch.—*Geo. W. Perry, M. of M., Philadelphia, Wilmington and Baltimore R. R. Co., Wilmington, Del.*

The machinery purchased of you works to our perfect satisfaction. The Band Saw machine is pronounced by all who have seen it work, the best in the market. We shall be pleased to recommend your house to all wanting machinery, and can assure them of being dealt with fairly.—*Pease, Steele & Co., Lumber Merchants, Thompsonville, Conn.*

The Engine and Lathe I obtained of you, last December, proves to be all you recommended. The Cross Feed and new Tool Block, I could not dispense with, unless I could replace them. Neat, simple and entirely reliable throughout, I could not ask for a better made tool.—*A. M. Dexter, Mattapoisett, Mass.*

The Variety Moulding Machine and the Scroll Saw which you supplied me with, have now been running for several months, and give entire satisfaction. I believe them the best articles for the purposes for which they are used of any that could be obtained in the country.—*Charles P. Stevens, Baltimore, Md., Manufacturer Cabinet Furniture.*

We have to thank you for the prompt manner in which our order for machinery, &c., was filled—all giving the greatest satisfaction. A house of your kind has long been required, where a man can supply himself with any kind of a machine he may fancy at less than manufacturer's prices.—*T. W. Currier & Co., Ottawa, Ca., Manufacturer of Doors, Sash, Blinds, Mouldings, etc.*

The machines I have purchased of you give entire satisfaction and work to a charm. I have every confidence in you, and would heartily recommend you to all manufacturers desiring any style of machinery. Your promptness and energy in furnishing me was very gratifying.—*Thomas S. Hudson, East Cambridge, Mass.*

We have great pleasure in testifying that, after the fair trial we have given all your machines and supplies, we consider them equal to the name they have so deservedly merited, and that they have given us universal satisfaction. We shall have much pleasure in recommending your house for very superior machinery of all kinds, and will be always proud to see shops fitted up with machines bearing the name "Gear."—*Peabody & Crangle Bros., Calais, Me.*

The Machine Bits that I purchased of you have given perfect satisfaction.—*James H. Marsh, Chair Manufacturer, Lincolnton, N. C.*

It gives us pleasure to say that all machines and supplies furnished by your house have given good satisfaction and have proved equal to your recommendation.—*Gregg, Steele & Co., Lawrence, Mass.*

The Bucket and Elunger Pump you sent me, works well. I think it is the best pump in use.—*N. L. Barrett, W. Townshend, Mass.*

We are pleased to report complete satisfaction with the machinery purchased of you last Fall. The system of business, alone adopted by your house, of furnishing all kinds of machinery at manufacturer's prices, should commend itself to all who want the best without regard to maker. Under this system, buyers may avail themselves of the best experience and save much time and perplexity in selecting.—*Hopkins, McDonald & Co., Ellsworth, Me.*

After giving your Dovetail Machine a three months' trial, and using it daily, we find that it does good work, stronger than hand work when done up, and perfectly satisfactory.—*Daniels & Harrison, Furniture Manufacturers, Boston, Mass.*

The Milling Machine bought of you has given good satisfaction, and should I want any more machinery, should be pleased to give you my orders.—*John J. Grant, Superintendent Cooperative Machine Co., Greenfield, Mass.*

We bought nearly all our machinery of the firm of A. S. Gear, of Boston, and were we to buy again we should buy of them, and for the following reasons: 1st. They are reliable, responsible and honorable in their dealings. 2d. They keep nothing but first class machinery. 3d. Every machine sold by them is fully warranted as represented. Finally, we say, give them a call, before you buy. Their assortment is very extensive.—*Morrisville, Vt., Mfg Co.*

The machinery we purchased of you is all that can be desired. Your house, and the manner of conducting business is new, and of inestimable value to producers and users of machinery.—*J. H. Smith & Co., Bangor, Me.*

Your immense warehouses, your interest to purchasers, your impartial manner of furnishing any and all machinery and supplies, and your judgment of what one needs, cannot be too highly appreciated.—*Moore & McCauseland, Gardiner, Me.*

The machinery supplied by you at different times has met all my requirements, and gives universal satisfaction.—*Joseph L. Ross, Manuf. of School and Church Furniture, Boston, Mass.*

I shall take pleasure in recommending your house to any one wishing to purchase machinery of any kind as one where they can obtain the best, and rely on your representations.—*Elisha T. Jenks, Middleboro', Mass.*

We are happy to acknowledge the fact that all the machinery we have purchased of you has been fully up to your recommendation with regard to it, and that we are every way satisfied with our several purchases.—*Kenyon, Dronon & Co., Pawtucket, R. I.*

The justly famous Balanced Jig Saw is the best saw in the market, with no exception. We run it through four inch white oak, using large saws, and we also saw brackets, using saws less than one-eighth of an inch, very rarely breaking a saw.—*Snow & Graf-ton, Augusta, Me.*

This is to certify that I have had in use in the Philadelphia & Baltimore Central R. R. Car shops, since August 28th, 1870, one of your Non-Shaking Balanced Jig Saws. I find it to do all you recommend it to do. I am pleased with it, particularly for its simple construction.—*S. D. Danfield, M. M., Chester, Del. Co., Pa.*

The machinery you furnished me with, after six months' trial, has given entire satisfaction. Your house appears to know exactly what manufacturers require, and furnish the best kinds in the market with a promptness scarcely equaled.—*Wm. Lynch, Epiphany, Prov. Quebec.*

If all you have dealt with are as well pleased with your manner of doing business as ourselves, you will soon be under the necessity of again enlarging your quarters. You will surely meet with the most unbounded success; this you richly deserve.—*Olmstead Safety Latch Co., Boston, Mass.*

What is said of A. S. Gear's Variety Moulding Machine.

The best beyond a doubt.—*Ellis, Britton & Eaton, Springfield, Vt.*

Indispensable—the best made.—*Colby Bros. & Co., Waterbury, Vt.*

Exceeds our expectations.—*Berky Bros. & Co., Grand Rapids, Mich.*

The Machine works beautifully.—*J. Mulligan, Supt. C. R. R. R., Springfield, Mass.*

In fact it exceeds your recommendations.—*V. D. Perry, M. C. B., H. P. and F. R. R., Hartford, Conn.*

We would not do without it if it cost twice the money.—*Shultz & Gobel, Chicago, Ill.*

Works better than we expected.—*A. White & Co., Boston, Mass.*

We like it very much.—*Ira G. Betts, Detroit, Michigan.*

Does all that you claim for it.—*E. B. Gibbs, M. M. St. Louis and I. M. R. R., Mo.*

Delighted with it. Is easily kept in order.—*Springfield, Vt., Toy Manufacturing Co.*

The most useful wood-working machine manufactured.—*Harvey, Morgan & Co., Concord, N. H.*

Has given perfect satisfaction.—*Clement & Cresey, Lawrence, Ms.*

No failure in any part of it. No substitute for it.—*G. Albin & Son, Springfield, Ohio.*

The greatest labor-saving invention of the age.—*E. Ball, Canton, Ohio.*

First-class—works with great rapidity and economy.—*U. S. Navy Yard, Washington, D. C.*

The two you sent us work to a charm.—*Fletcher & Webster, Nashua, N. H.*

We give your machine the preference over all others.—*Cole & Glass, St. Louis, Mo.*

Cannot conceive how it can be improved.—*Arnold and Catlin, Wenona, Mich.*

All it is represented. The best in use.—*George Hackett, M. C. B., C. R. R. of N. J.*

Does an immense amount of work in the best manner.—*Prescott Bros., Concord, N. H.*

All that you claim for it and more I think.—*F. A. Perry, M. M. Cheshire R. R., Keene, N. H.*

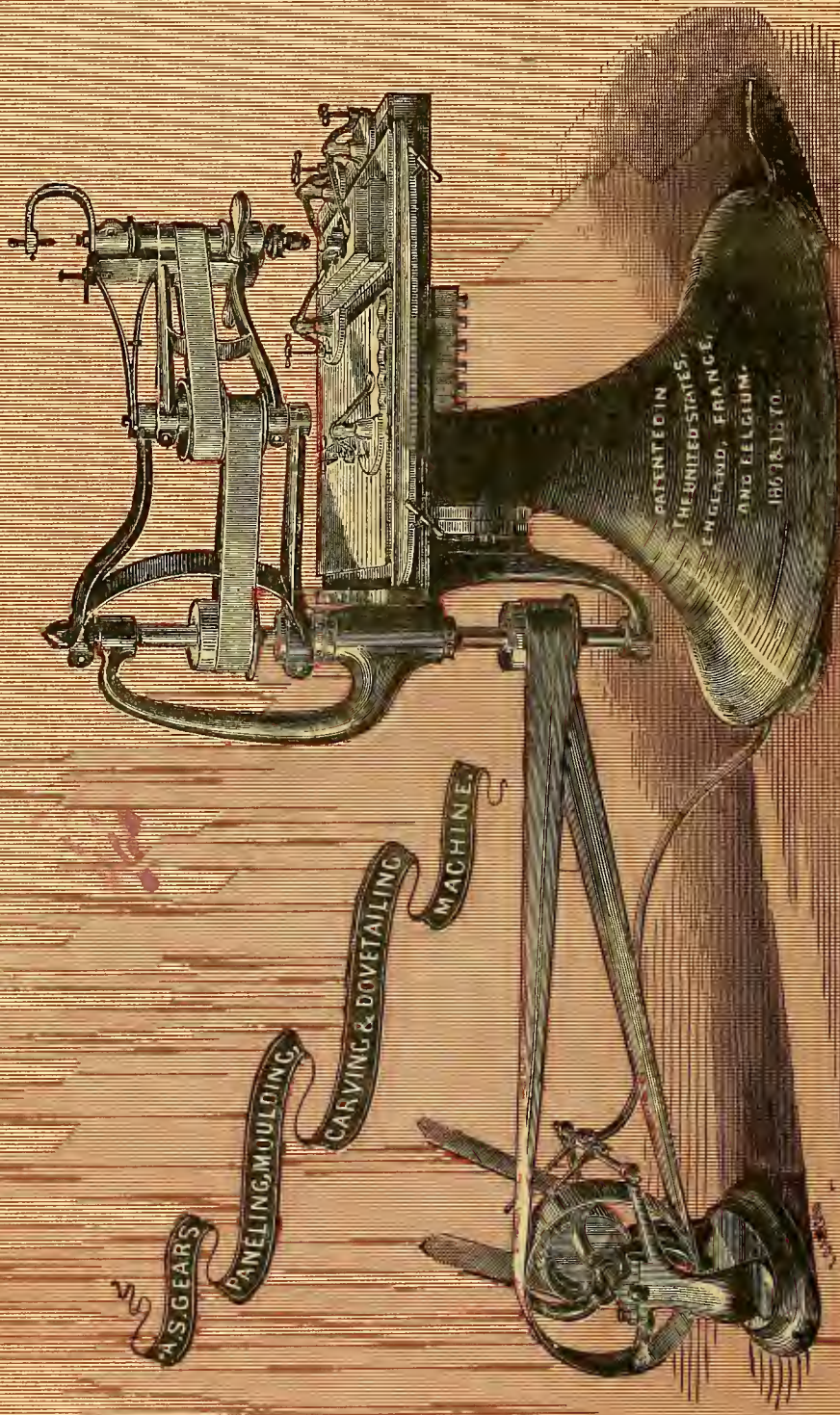
Have tried cheap machines, and think men do not understand their business if they try to get along without Gear's.—*Carpenter and Jones, Wells River, Vt.*

A Partial List of Companies, Firms and Individuals who have favored us with their patronage.

- New York and New Haven Railroad Company, New Haven, Conn.
 Cook, Carpenter & Coleman, Syracuse, N. Y.
 S. C. Nickerson, Bridgeport, Conn.
 Sturtevant Manufacturing Company, Lebanon, N. H.
 Boston and Albany Railroad Company, Allston, and Springfield, Mass.
 Grand Trunk Railroad Company, Montreal, Canada.
 William Drum, Quebec, Canada.
 Hopkins & McDonald, Ellsworth, Me.
 C. Cooper & Co., Frederickton, N. B.
 Morrisville Manufacturing Company, Morrisville, Vt.
 J. Safford & Sons, Morrisville, Vt.
 Cheshire Railroad Company, Keene, N. H.
 Arnold & Catlin, Winona, Wis.
 Saratoga and Rensselaer Railroad Company, Troy, N. Y.
 Matthew Hennon, Morgantown, West Virginia.
 International and Great Northern Railroad Company, Houston, Texas.
 F. Geldowsky, East Cambridge, Mass.
 Robinson & Brown, Charlestown, Mass.
 H. H. Amsden & Sons, Fisherville, N. H.
 R. N. Walton, Atlanta, Ga.
 Baltimore and Onio Railroad Company, Baltimore, Md.
 New Haven Car Company, New Haven, Conn.
 Larkin & Bishop, New Haven, Conn.
 Ransom, Hempey & Co., Cleveland, Ohio.
 G. W. Woolley & Son, Hartford, Conn.
 Philadelphia and Baltimore Central Railroad Company, Lamokin, Pa.
 Boston, Lowell and Nashua Railroad Company, East Cambridge, Mass.
 Charles P. Stevens, Baltimore, Md.
 John Benedict, Saratoga Springs, N. Y.
 M. C. Wadsworth, Gardiner, Me.
 C. E. Burnham & Co., St. Johns, N. B.
 William Mason, Taunton, Mass.
 Montpelier Manufacturing Company, Montpelier, Vt.
 Chase & Smith, Burlington, Vt.
 S. D. Mandell, Aurora, N. Y.
 Crownpoint Iron Company, Crownpoint, N. Y.
 D. W. Fox, Portland, Me.
 Fort Wayne Organ Company, Fort Wayne, Ind.
 Kennebeck Land and Lumber Company, Augusta, Me.
 Brattleboro Manufacturing Company, Brattleboro, Vt.
 Grand Rapids Manufacturing Company, Grand Rapids, Mich.
 A. Stephens & Son, Halifax, N. S.
 Union Pacific Railroad Company, Sacramento, Cal.
 Vermont Central Railroad Company, St. Albans, Vt.
 Pennsylvania Central Railroad Co.
 T. W. Currier & Co., Ottawa, Canada.
 Canada Horse Nail Company, Montreal, Can.
 Carvell Bros., Charlottetown, P. E. I.
 Gordon & Keith, Halifax, N. S.
 New York Central and Hudson River Railroad Company.
 Chicago and Alton Railroad, Bloomington, Ill.
 Krauss & Bros., Gerysville, Penn.
 Rolfe, Tyler & Co., Burlington, Vt.
 Cyrus Wakefield, Boston, Mass.
 Wason Manufacturing Company, Springfield, Mass.
 European and North American Railroad Company, Bangor, Me.
 Grover Bros., Cambridgeport, Mass.
 Richard A. Hughes, Boston, Mass.
 American Steam Gauge Company, Boston, Mass.
 American Needle Company, " "
 Colcord & King, " "
 Creesev & Noyes, " "
- Atlantic Car Company, Salem, Mass.
 H. P. & I. N. Keith, West Sandwich, Mass.
 United States Navy Yard, Charlestown, Mass.
 United States Navy Yard, Portsmouth, N. H.
 Smith & Wellman, Montgomery, Vt.
 Boston Chair Company, Boston, Mass.
 Kenyon, Drown & Co., Pawtucket, R. I.
 Lovejoy, Smith & Walloch, Calais, Me.
 La Porte Car Manufacturing Company, La Porte, Ind.
 Eastern Railroad Company, Salem, Mass.
 G. F. & J. T. Patten's Sons, Bath, Me.
 Treat, Lang & Co., Bath, Me.
 Atlantic, Mississippi and Ohio Railroad Company.
 Ripley, Howland & Co., Boston, Mass.
 Orgill Bros. & Co., Memphis, Tenn.
 F. E. Canda & Co., Chicago, Ill.
 Bangs, Weston & Co., Bath, Me.
 J. P. Squires & Co., East Cambridge, Mass.
 Boston, Hartford and Erie Railroad Company, Readville, Mass.
 Hinkley Locomotive Works, Boston, Mass.
 D. L. Lord, East Boston, Mass.
 Alexander McBee, Greenville C. H., S. C.
 Boston Car Wheel Company, Cambridgeport, Mass.
 New York and Harlem Railroad, New York City and Morrisiana.
 Porter Blanchard's Sons, Concord, N. H.
 Mt. Washington Railway Company.
 Highland Street Railway, Boston, Mass.
 New Orleans, Jackson and Great Northern Railroad Company, New Orleans.
 Davis & Furber, North Andover, Mass.
 N. S. Collyer & Co., Pawtucket, R. I.
 Northern Railroad, Toronto, Ont.
 Boston and Maine Railroad Company, Lawrence, Mass.
 Narragansett Steamship Company, Newport, R. I.
 J. J. Hillman, Boston, Mass.
 West Amesbury Manufacturing Company, West Amesbury, Mass.
 Perkins Bros. & Co., Lawtonville, Ga.
 Boston and Maine Foundry Company, Boston, Mass.
 Dane, Allen & Co., Skowhegan, Me.
 Panama Railroad Company, Aspinwall, New Granada.
 Mobile and Ohio Railroad Company, Mobile, Ala.
 William Abbot, Douglass, Mass.
 E. E. Washburn, Taunton, Mass.
 A. Atherton, Worcester, Mass.
 S. I. Russell, Chicago, Ill.
 O. & J. Nottleman, Chicago, Ill.
 Joseph Harris, Chicago, Ill.
 Henry Campbell, Chicago, Ill.
 Prang Bros., St. Louis, Mo.
 Jauson & Bro., St. Paul, Minn.
 Chicago, Burlington & Quincy Railroad.
 Johnson & Bond, Cleveland, Ohio.
 Colwell, Clark & Co., Ottawa, Ill.
 Vance & Wells, Ravenna, Ohio.
 Derby Building and Lumber Company, Derby, Conn.
 R. Prince & Co., Billerica, Mass.
 Iron Mountain Railroad Company, St. Louis, Mo.
 Henry Webber, Detroit, Mich.
 Henry Hall, Fon du Lac Car Shops, Wisconsin.
 Conant & Moore, Peireton, Ind.
 Baker, Christie & Co., Springfield, Ohio.
 E. B. Dobell, Lawrenceburgh, Ind.
 Indianapolis Chair Manufacturing Co., Indianapolis, Ind.
 George P. Carter & Co., Boston, Mass.
 Russell Paper Company, Lawrence, Mass.
 Fall River Bleachery, Fall River, Mass.

Special attention given to fitting out Establishments complete with Machinery selected from all Manufacturers in the country.

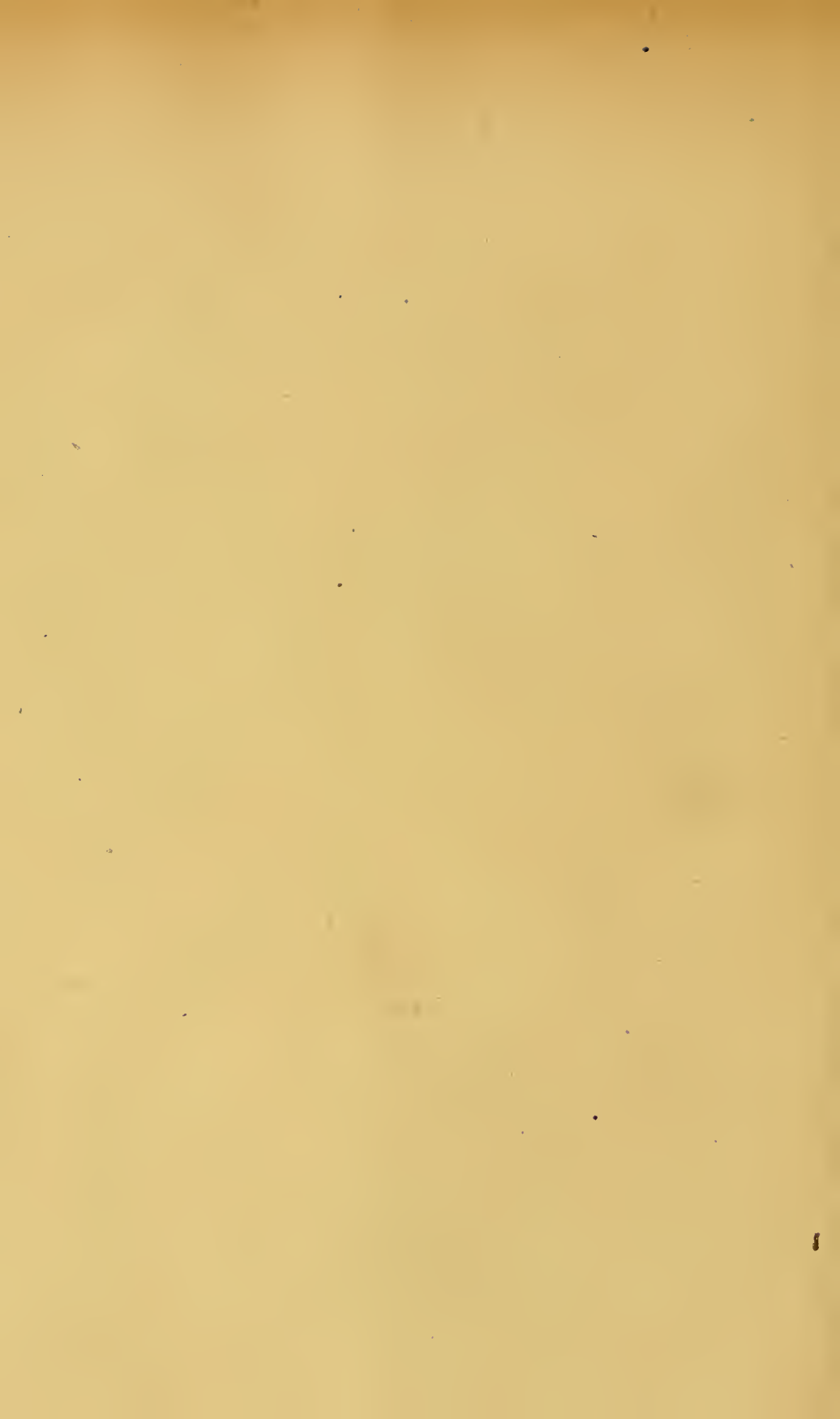
Gear's New Patent Improved Machine



For Paneling, Moulding, Carving, Dovetailing and Boring.

FOR DESCRIPTION SEE PAGE 35

Address A. S. Gear, 56 to 62 Sudbury Street, Boston, Mass., U. S. A.



1

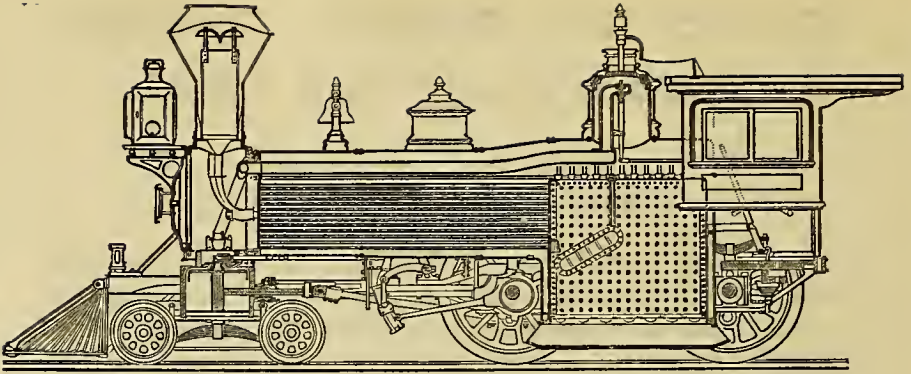
From the Boston Journal
of January 31st, 1881.

The Globe Company.

2

This company was incorporated under the laws of Connecticut, May 22, 1879, under a broad and liberal charter, enabling it to purchase and develop any new inventions of merit and profit, it furnishes its capital to aid the inventive genius of the world, for it is not limited in its operations to this country, but can extend them, as its name implies, all over the globe. The company now owns Berney's spark, smoke, gas and steam consumer, one of the most valuable inventions ever made, for it not only rids the railroad companies, adopting it, from risks of fires along their lines from sparks from locomotives, preserves our forests from destruction, and saves property and even life from burning bridges, but ministers to the comfort and pleasure of travel, and prevents the waste of fuel from incomplete combustion. The invention is being rapidly adopted by the far-seeing officials of various railroads, and it will not be surprising to see advertised next summer "Berney's Spark Consumer and Smoke Preventer applied to all locomotives on this line," as an additional inducement for travelers, in the same manner that railroads announced their adoption of the Miller platform and coupler as a means of safety. The public will insist upon it and railroads must have it. In addition to the spark arrester Col. Berney has paid attention to other improvements in the locomotive, such as the "Variable Exhaust Tip," "Berney's Safety Valve Muffler and Feed Water Heater," "Berney's Feed Water Circulator," and "Anthracite Waste Consuming Locomotive." This last will be likely to prove the most valuable of all the patents owned by the Globe Company, for by means of it millions of tons of worthless coal dust can be utilized.

The semi-annual statement of the condition of the Globe Company has been published, showing a clear surplus above the capital of \$1,000,000 of \$52,926.21, and the third quarterly dividend of $2\frac{1}{2}$ per cent on the preferred stock will be paid February 1. This stock, of which there is only a limited amount, is sold at par value, \$25 per share, thus paying 10 per cent interest annually. Applications should be made to the company's office, Rialto Building, 131 Devonshire street, Boston.



OUR NEW INVENTIONS.

During the year 1880 every plan and device was tried to improve the locomotive by our General Manager, and we are pleased to state that many of them were successful, and are not only in practical use, but patents allowed for them. The Company will soon have their

ANTHRACITE WASTE-CONSUMING LOCOMOTIVE

out. This wonderful engine will prove that the 100,000,000 TONS OF ANTHRACITE WASTE can be successfully used as fuel in locomotives.

As the daily production of this waste would furnish fuel for nearly all the locomotives in the United States, but to-day is worthless at the mines, some idea of the value of the patents that control the use of it, may be seen at a glance.

NEW TESTIMONIALS.

OLD COLONY RAILROAD, MASTER MECHANIC'S OFFICE,
Geo. W. Reynolds, Master Mechanic,
Taunton, January 20th, 1881. }

A. BERNEY, ESQ.—

Dear Sir:—I have fitted several locomotives with your Spark Consumer; the two last with your later improvements. They run clean, free from sparks, no fires could be set from the stacks, very little smoke, and plenty of steam.

Yours truly, GEO. W. REYNOLDS.

MACHINERY DEPARTMENT,
CUMBERLAND AND PENN. R. R.,
Mt. Savage, Md., January 3, 1881. }

COL. BERNEY:

Dear Sir:—Our engine is doing very well, indeed. She could not do better if I was to try. She has not lost a trip since she came out of the shop. Keep close to the principle we have here; it will work on any railroad. Invite railroad men to come on this road and see its workings. Boston is too far away for southern roads.

Yours very respectfully, N. W. HOWSON.

GREEN BAY AND MINNESOTA R. R.,
Fort Howard, Wisconsin, Dec. 28, 1880. }

A. BERNEY, ESQ., General Manager GLOBE Co., BOSTON, MASS.

Dear Sir:—In relation to the performance of your Spark Consumer, recently applied to one of our locomotives, I am pleased to inform you that the engine steamed free, is comparatively light on fuel, and THERE IS NOT A SPARK OF FIRE SEEN OR FELT issuing from the stack; in brief, your Spark Consumer works entirely satisfactory.

Respectfully, E. OSBORN, M. M.

TO THE STOCKHOLDERS OF
THE GLOBE COMPANY,

131 DEVONSHIRE STREET.

Boston, Mass., Feb. 1st, 1881.

The fourth quarterly dividend of 2 1-2 per cent. (10 per cent. per annum) will be paid on and after May 1st, 1881, upon application at the office of the Company.

To those living out of the city, checks will be sent to them, upon notice, if they desire them for their dividends.

HORACE P. STEVENS,
Treasurer.

The management take great pleasure in informing you of the prosperous condition of the corporation. We enter upon the year with no debts of any description.

May 22d, 1879, we owned one patent, but on May 22d, 1881, we will own, or have control of nearly thirty valuable patents, over one-half of which will have SEVENTEEN YEARS TO RUN, being the new patents to be used by The Globe Company. A career of prosperity is now open to us never excelled by any corporation. WE SEEK TO DO GOOD,—to save the precious fuel furnished by nature.

All the genius in the world cannot make one pound of coal. It will be seen that if we can save, as we will do, MILLIONS OF TONS OF COAL, that our Company is to become a benefactor of our race. The thousands of pamphlets we are issuing are awakening public attention to the great waste now going on in the COMBUSTION OF FUEL, as well as the nuisance created by the persons so wasting it.

The thanks of the full Board of Directors were unanimously voted to the President, General Manager, Secretary and Treasurer, for tendering their services, without salaries, for the year 1881, they all being large stockholders, determined to lessen the expenses and make larger dividends. The executive officers feel assured that their action will give confidence to all concerned.

The new \$25.00 certificates are now ready for delivery, and will be exchanged only on presentation of the old stock, at this office, in person or by mail.

Stock sold at the office for Stockholders without any expense, also at public auction at 1-2 per cent. commission, or at the Brokers' Board after April next.



By order of the Board of Directors.

GEORGE E. DUTTON,
Secretary.

Boston, Mass., Feb. 1, 1881.

10 PER CENT. INTEREST, Payable Quarterly.

A LIMITED AMOUNT OF THE PREFERRED STOCK

of The Globe Company is now offered for sale in shares of \$25 each. This Stock is but one-quarter of the whole capital, and must receive 10 per cent. dividends or interest before the Common Stock does any.

This is more than double the interest now paid by savings banks, and on bonds, and this Company will soon pay even more than that.

The dividends are sent by mail to every owner of Stock, by Check, or by calling at the office of the Company, promptly, on the 1st day of February, May, August and November.

To enable persons to purchase this Stock, subscriptions will be received on the following easy terms:

One-quarter when subscribed for;

One-quarter one month from date of subscription;

One-quarter two months from date of subscription;

One-quarter three months from date of subscription;

When the Stock and one-quarter's interest, or dividend, will be paid to the subscriber.

SEMI-ANNUAL STATEMENT.

The following is a copy of the sworn statement of the President and Treasurer, showing the condition of the affairs of the Company January 1st, 1881.

Liabilities, None.

Surplus above Capital Stock, - - \$52,926.21

In seven months active business, which is now established, our three shops are supplied with first-class tools, and no more required. Our offices fitted up. Three dividends paid and others provided for.

JOSEPH KELLY, President.

HORACE P. STEVENS, Treasurer.

GEO. E. DUTTON, Secretary.

FRANK P. EPPS, Ass't Sec'y.

A. BERNEY, General Manager.

DIRECTORS.

A. PETTIGREW, of Gloucester,

H. WONSON, of Gloucester,

EZRA MILLER, of New York,

A. BERNEY, of Boston,

A. T. SMALL, of Holbrook,

O. L. YOUNG, of Cambridge.

H. P. STEVENS, of Boston.

N. A. DUTTON, of Boston,

G. E. DUTTON, of Boston,

JOSEPH KELLY, of Providence,

B. DUTTON, of Charlestown,

NATHAN DAVIS, of Groton.

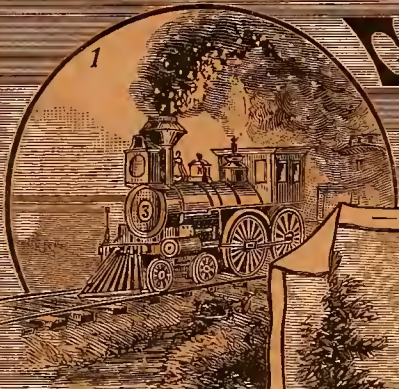
THE GLOBE CO.

BERNEY'S

SMOKE, SPARK, GAS & STEAM.

CONSUMER

BOSTON, MASS.



3 Milton Pa. Destroyed



BERNEY'S SPARK CONSUMER.

If we are to put faith in the testimony of experts and the conclusions of the law, the public is in the way of being benefited in one of the experiences of every day life which come home to the clothes, the eyes, and the comfort of thousands of travellers. At this season of the year, when it is a necessity of railway travel that the windows of cars should be open, the sparks from the locomotive are a terror and a torment. They are constantly renewed; they blacken the hands and face; they burn in the eyes: they are utterly beyond the control of the passenger. No one who is accustomed to travel but has sighed over and over again for relief from this plague, and so far in vain. The wear and tear of the cars and of the garments of passengers from this source is immense. If on every train this evil could be averted, the monetary gain would be large, and the addition to the pleasure and healthfulness of travel immeasurably increased. There is an invention which meets this universal demand. "Berney's Spark Arrester and Consumer" has been thoroughly tried, and answers, it is claimed, every purpose for which it was designed.

But there are other considerations which will place the economical aspects of this invention in a more striking light. It will save all danger from fires caused now by the sparks from locomotives, a danger ever present. Again, although this appears not to have been one of the original objects of the invention, it saves a very appreciable amount of fuel. From eight to sixteen per cent. saved in the cost of coal or wood is no slight item in railroad expenses. The railroad corporations may probably be left to their own shrewdness in adopting an apparatus which appears to be so necessary to the highest economy in the management of their business. If one of these spark arresters should ever be applied to a train in mid-summer, and it should prove to be what the experts declare it to be, the relief to the sweltering passengers will lead them to compare the road so free from dust with those subjected to its horrors in a way which will open the ears of directors, and put them at least upon explanations. At any rate, the invention must be thoroughly tested. If it is worthless, it can readily be discarded: if it is what it is claimed to be, no railroad can afford to be without it.—*Journal*.

Fires Caused by Sparks!

Millions of dollars worth of property is destroyed by sparks, and we would call the attention of the reader to the engravings on the front page:

PLATE 1.—Shows a locomotive sending forth a great volume of Smoke and Sparks; and

PLATE 6.—Illustrates a locomotive, railroad train without any Sparks or Smoke.

PLATE 2.—Exhibits the destruction of a STEAMBOAT BY SPARKS.

ST. LOUIS, Nov. 2, 1879.

Steamer Bismark, lying just below the south wall of the Arsenal, three miles below the centre of the city, caught fire about noon to-day, and in a short time was totally destroyed. The origin of the fire is not known, but the flames were first seen issuing from the forward part of the cabin. The presumption is that it caught from sparks from a locomotive on the St. Louis, Iron Mountain & Southern Railroad, which runs within a few yards of where the boat lay.—*Herald and Journal*.

PLATE 3.—The town of Milton, Pa.

Behold What a Spark Doeth. The Town of Milton, Pa., Destroyed, Friday, May 14, 1880. Hundreds of People Rendered Homeless. Loss, \$1,500,000. Several Lives Sacrificed.

The thriving town of Milton, Pennsylvania, which has a population of about three thousand, sustained a loss of \$1,500,000 by fire to-day, rendering homeless 1500 people. About 11 45 o'clock A. M., smoke issued from the roof of the framing shop connected with the car works of Murray, Doughal & Co., adjoining the Philadelphia & Erie Railroad. The fire, it is believed, was caused by sparks. In a few moments the whole building was ablaze. In less than an hour four of the main buildings of the works were destroyed, involving a loss of at least \$1,500,000. The wind was blowing briskly from the north, and house after house yielded to the flames. This evening at 7 o'clock 600 buildings are in ruins as the result of the conflagration. Word was promptly sent to Williamsport, Sudbury, Lewisburg, Danville, and other towns, for assistance, and steam engines came in response as soon as the railroad companies could offer transportation, but the fire had gained such a headway they could accomplish very little good. The flames, fanned by a strong wind, spread with marvellous rapidity, scarcely leaving a house standing in their pathway. The fire reached its worst phase at 3 o'clock, when the town presented the appearance of a sea of flame.—*Boston Herald, May 15, 1880.*

The Fire in Milton was caused by Sparks from a Locomotive.

—*Globe, May 16.*

PLATE 4.

A Sleeping Car Burned. Narrow Escape of the Occupants.

MEMPHIS, Feb. 23, 1880.

This morning the sleeping-car "Texas," attached to a train from Louisville, was discovered to be on fire just before reaching Galloways, and by the time the train had stopped, the flames had gained such headway that the passengers were barely able to escape with their lives, leaving clothing and light baggage behind, which, together with the car, were entirely consumed. Many passengers, including some ladies, arrived here *en dishabille*.

—*Herald, Feb. 24, 1880.*

PLATE 5.

Fatal Railroad Accident in Missouri.

ST. LOUIS, March 19.

Specials from Kansas City say an extra freight train on the Hannibal & St. Joseph Railroad went through the approach to Long Branch bridge, six miles east of Cameron, Mo., this morning. The locomotive and ten cars were wrecked. Ira Green, engineer, was instantly killed, Edward Conner, fireman, mortally wounded, and Levi Rocketts, brakeman, was badly injured. The approach had been burned during the night. The fire is supposed to have been caused by sparks from a previously passing train.

—*Providence Journal.*

PLATE 7.

A Continuous Line of Fire along the Northwestern Railroad One Hundred and Twenty-Nine Miles in Length, and Extending Back from Twelve to Fifteen Miles.

CHICAGO, May 16.

Dispatches from the vicinity of Green Bay, Wis., report that the spring fires north of that point are raging frightfully along the line of the Northwestern Railroad, and from Marinette, Wis., to Ishpeming, Mich., a distance of 129 miles. It is now almost one continuous blaze, the fire extending back, at some places, from 12 to 15 miles. The Northwestern Railroad Company lost 130 cords of wood yesterday, and the Quincy Mining Company lost 5000 cords. Several small houses were burned. The losses on pine lumber are heavy, aggregating already several hundred thousand dollars, and a heavy rain will alone arrest the progress of the fire.—*Advertiser.*

Fire on Long Island.

NEW YORK, May 21.

A fire has been raging several days between South Oyster Bay and Farmingdale, on Long Island, and has caused considerable destruction to property. It is supposed to have caught from a locomotive, and broke out in Mappapequa swamp. It burned through the swamp and adjoining woods, destroying all the underbrush and most of the fences, and extended northward toward Farmingdale. It continued to burn until Wednesday night, when it was quenched by rain.—*Boston Journal.*

Railroad Bridge Destroyed.

The covered bridge of the New London Northern Road over the Yantic, at Norwich Falls, took fire Monday afternoon from sparks from the four o'clock train up, and was totally consumed. The structure was thoroughly dried, and the heavy wind blowing made all attempts to save it useless.—*Herald.*

The Devastation Spreads in all Directions. Locomotives Setting the Fires.

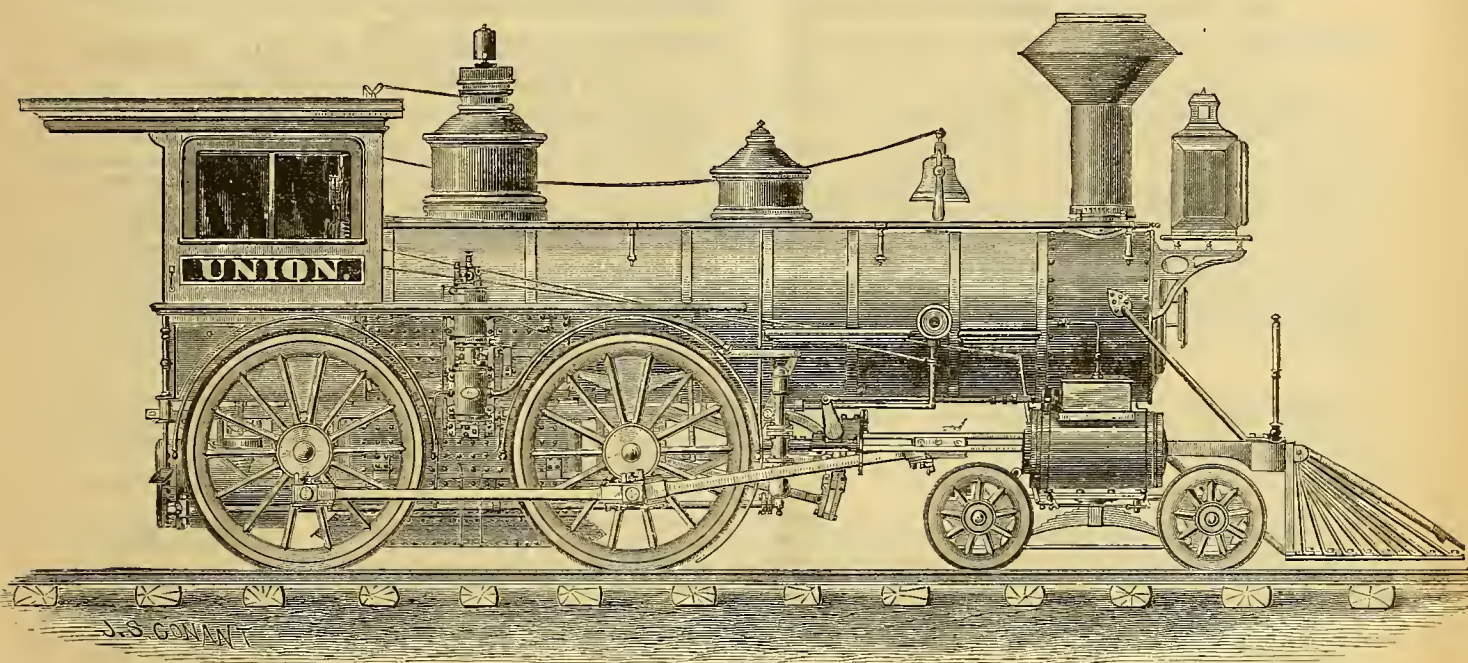
NEW YORK, May 17, 1880.

The fire fiend has not relaxed its hold on southern Jersey. There was great destruction yesterday by the flames. The wind began to blow from the northwest at sunrise, and blew a gale all day, fanning to life the dying embers, and rekindling the old blazes that were flickering on the edges of the cedar swamps. By 10 o'clock a line of fire was travelling southward over the Colwell track, that had escaped before, and the region from Egg Harbor to Mazeon, twelve miles southeast to Tuckahoe, twenty-three miles to May's landing, and seven miles southwest to Millville. Twenty-seven miles of country were in flames. In the country, to the west of Egg Harbor City, on the line of the Camden & Atlantic Railroad, as far as Elmwood, seven miles had been eaten bare by the flames the day before, but the fire, beginning to the south of Egg Harbor vineyards, which had been saved the night before, worked around to the westward in the face of the gale; and when the solid woods near Hammatown came upon its lee, it went darting down to the Little Egg Harbor river valley, sweeping the country clean as it passed by. So rapid was its onward movement that people fled from its advance to escape with their lives. The ground burned over yesterday in Colwell tract alone is more than 18,000 acres, and the surface over which fire travelled was at least six times as much. In all, more than half as much territory was burned over in one day than had been swept by flames during the entire two weeks in which fire raged in southern New Jersey. A church and school were destroyed in Cumberland County just after the departure of the congregation. Hundreds of people fought the flames at various points. Quite a number of frame buildings were burned and human life imperilled, but nobody perished yesterday so far as reported. People living along the railroad complain bitterly of the damage done by engines, especially those in which hard coal is used. The fires are started by locomotives in many cases. A few days ago one engine started seven fires within a distance of ten miles.—*From Boston Globe.*

We could quote over a thousand fires from the files of the newspapers in the last ten years, involving the loss of millions of dollars.

SPARKS AND SMOKE CONSUMED,

Saving an Immense Amount of Coal and Wood in Railroad Locomotives.



THE GLOBE COMPANY,

OF HARTFORD, CONN.

OFFICE, Nos. 10 & 11 RIALTO BUILDING, 131 DEVONSHIRE STREET,

BOSTON, MASS.

Opposite the Boston Post Office.

INCORPORATED MAY 22. 1879.

COMMON STOCK,	-	-	-	-	-	-	\$750,000
PREFERRED STOCK,	.	-	-	-	-	-	\$250,000
							<u>\$1,000,000</u>
SHARES,	-	-					\$25.00 EACH.

JOSEPH KELLEY, *President.*

ALLEN B. CURRIER, *Treasurer.*

GEORGE E. DUTTON, *Secretary.*

ASA WELLINGTON, *Counsel.*

A. BERNEY, *General Manager.*

PATTERN AND MACHINE SHOPS,
83 HAVERHILL STREET, BOSTON.

Castings made at Foundry, Pocasset, Mass.

The Preferred Stock receives a 10 per cent annual dividend out of the net earnings of the Corporation, before the Common Stock can receive a 10 per cent dividend. Then both Stocks receive any further dividends mutually, alike.

THE COMPANY commenced active business May 20th, 1880, paid its first quarterly dividend of 2½ per cent., August 1st, 1880, out of its net earnings. Its 2nd quarterly dividend, November 1st, 1880; and will pay a regular quarterly dividend on the 1st of February, May, August, and November, every year.

It has its own Pattern and Machine Shops.

Its offices—In Boston, and will soon establish Branches in CHICAGO, ILLINOIS, and ATLANTA, GEORGIA; MONTREAL, CANADA, and in the CAPITALS OF EUROPE.

LAWS AND DECISIONS:

The following are a few of the Legislative enactments and abstracts of Common Law Decisions, relating to the Rights, Duties, and Liabilities of Railroad Companies, prepared for publication by request of the Globe Company, are herewith respectfully submitted.

ASA A. WELLINGTON, *Attorney and Counsellor-at-Law*,
131 Devonshire St., Boston, Counsel for "The Globe Co."

Gen. Statutes, title 4, sec. 32, p. 455: "When a building or other property is injured by fire communicated by a locomotive engine, the corporation using it is responsible for such injury."—*Maine Laws*.

Gen. Laws, ch. 162, sec. 8: "The proprietors of every railroad shall be liable for all damages which shall accrue to any person or property by fire or steam from any locomotive or other engine on such road."—*New Hampshire Laws*.

Gen. Statutes, ch. 28, sec. 78: "When any injury is done to a building or other property by fire communicated by a locomotive engine of any Railroad Corporation, the said corporation shall be responsible in damages for such injury, unless they shall show that they have used all due caution and diligence, and employed suitable expedients to prevent such injury."—*Vermont Laws*.

Gen. Statutes, ch. 63, sec. 101: "Every (railroad) Corporation shall be responsible in damages to any person or corporation, whose buildings or other property may be injured by fire communicated by its locomotive engines."—*Massachusetts Laws*.

Rev. Statutes; title, Railroads. Secs. 13, 14, 15, 16: Sec. 13.—"It shall be the duty of every Railroad Company in this State, and of every company or person operating or using any railroad in this State with a locomotive engine or locomotive engines, to take and use all practicable means to prevent the communication of fire from locomotive engines used or employed by them, or any railroad in this State in passing along or being upon any such railroad, to any property of whatever description of any owner or occupant of any land adjacent or near to such railroad."—*New Jersey Laws*.

The following are abstracts of Supreme Court decisions pertaining to the above subject:

(1.) *Spanlding vs. Chicago & C. R. R. Co.*, 39 Wis. 110. This was an action to recover damages for injuries to the plaintiff's woodlands by fires alleged to have been caused by an insufficient and unsafe locomotive engine of defendant.

The Court, in rendering its decision, say:—"The law upon this subject is, that the companies, in the construction of their engines, are bound not only to employ *all due care and skill* for the prevention of mischief arising to the property of others by the emission of sparks or any other cause, but they are also bound to avail themselves of all the discoveries which science has put within their reach for that purpose, provided they are such, as under the circumstances it is reasonable to require the companies to adopt."

(2.) *Gilman vs. St. Louis R. R. & C. Co.*, 39 Ill. 455. This was an action to recover for loss of hay, &c., destroyed by defendants' locomotive engine. The evidence tended to show that the engine was running without suitable protection to prevent the emission of sparks from its smoke stack, and that fire caught on several adjacent farms immediately after the passing of the train.

The Court, in rendering its decision, say:—"It is not requiring too much of railway companies, which are sending over the country so dangerous an element as fire, that they should use all the appliances of science, and the highest degree of diligence, to prevent the destruction of the immense amount of property contiguous to their lines."

(3.) *Bass vs. Chicago & C. R. R. Co.*, 28 Ill. 9. This was an action to recover for wheat burned by defendants' locomotive engine, under a charge of negligence. The court, in its opinion, makes use of the following language:—"The evidence in this case was abundantly sufficient to show that the injury of which the plaintiff complains was caused by the emission of sparks or particles of ignited coke coming from one of the defendants' engines; and there was no proof of any precaution adopted by the company to avoid such a mischance. The defendants are a company entrusted by the Legislature with an agent of extremely dangerous and unruly character, for their own private and particular advantage; and the law requires of them that they shall, in the exercise of the right and powers so conferred upon them, adopt such precautions as may reasonably prevent damage to the property of third persons, through, or near, which their railway passes."

(4.) *Bedel vs. Long Island R. R. Co.*, 44 N. Y. 367. Action to recover damages for alleged burning by defendants of the plaintiff's dwelling-house, situated near the line of their road, in the village of Hamstead, Queen's county, October 23, 1863. The defendants' engine (a dummy) had formerly been guarded by a spark catcher, or screen on the top of its smoke pipe; but a short time previous to the fire, it had from some cause been removed, but soon after the injury complained of, was replaced.

The Court, in rendering its decision, say:—"It matters not that it was not common to use the spark arrester upon dummy engines. It is enough that the evidence tended to show that this engine could not, *with safety*, be run near dwellings *without this appendage*; and that it could be with it; and hence ordinary prudence required its use. This was evidence from which the jury could properly infer negligence."

RIGHTS AND LIABILITIES OF RAILROAD COMPANIES AS COMMON CARRIERS OF FREIGHT.

Railroad companies carrying goods or merchandise for hire or reward, are in the strictest sense *Common Carriers*; and as such, are entitled to all the rights and privileges, and subject to all the liabilities of *Inland Common Carriers*. They have a *Lien* for all proper charges, whether customary or under special contract on all freight earned in the transportation of merchandise. From the time of delivery and receipt of the goods, until their arrival at the place of destination, the law makes them in the nature of *insurers*; and they are answerable for all losses which do not fall within the excepted cases of the act of God, (meaning inevitable accident, without the intervention of man) and public enemies.

In all cases of loss, the law presumes against them, unless they can show that such loss was occasioned by the public enemy, or by such acts as could not happen by the intervention of man, as lightning and tempests.

They are bound to do what is required of them in the course of their employment as common carriers, if they have the requisite convenience to carry, and are offered a reasonable or customary price; and if they refuse, without just grounds, they are liable in damages.

They are liable for the acts of their agents, servants and employes, as well as their own.

They are responsible for the loss of a box and its contents, or a parcel of goods, though they be ignorant of the contents, or though their contents be ever so valuable, unless at the time of delivery to them they make a *special acceptance*; with this qualification, however: if the owner be guilty of any fraud or imposition in respect to the carrier, as by concealing the value or nature of the article, or deludes him by his own carelessness in treating the parcel as a thing of no value, he cannot hold the carrier liable for the loss of the goods.

They have the right to refuse transportation of articles in their nature dangerous to life and property, as dynamite, &c.

Special Notices.

It is a very common practice for common carriers to attempt to restrict their responsibility by special notice of the extent of what they mean to assume; and this may relieve them to a certain extent. The goods in such case are understood to be delivered on the footing of a *special contract*, superseding the strict rule of the common law; and it is necessary in order to give effect to the notice, that it be *previously brought home to the actual knowledge of the bailor* (consignor) and be *clear, explicit and consistent*. The doctrine of exemption by means of these notices, as construed by the Courts, is, that they serve to protect the carrier *only from extraordinary events, or from that responsibility by mistake or inadvertance, which belongs to him as an INSURER*, and not from the consequences of the want of due and ordinary personal care and diligence. The Courts are inclined to construe these notices most strictly against the party issuing them.

AS COMMON CARRIERS OF PASSENGERS.

Railroad companies, as carriers of passengers, are bound to provide competent vehicles, suitably and safely equipped, and with careful and skillful persons to manage them. They are bound to give all reasonable facilities for the reception and comfort of passengers, and to use *all precautions* as far as human care and foresight will go, for their safety on the road. They are answerable for the smallest negligence of themselves and servants.

They are not at liberty to turn away passengers, if they have sufficient room and accommodation. But they are not bound to receive passengers who refuse to comply with the reasonable regulations of the road, or are guilty of gross and vulgar habits of conduct, or are disorderly, or whose characters are unequivocally bad, or whose object is clearly for hostile or injurious purposes.

They have the right to establish and enforce reasonable and wholesome rules and regulations for the conduct of passengers; also to establish for their sole benefit, uniform fares, tolls, and charges upon all passengers and property conveyed or transported on their roads, subject only to such alterations as may be made by legislative enactments.

Personal Baggage of Passengers.

It was formerly held that common carriers of passengers were not answerable as *carriers* for the baggage of the passengers, unless a *distinct price* was paid. But the custody of the baggage is an accessory to the principal contract; and the modern doctrine, and the tendency of modern cases, seem to be to place coach proprietors, in respect to baggage, upon the ordinary footing of *common carriers*. This responsibility may, to a certain extent, be restricted by *special notice*.

LOCOMOTIVES RUN WITH ANTHRACITE DUST.

But the most valuable Patents, owned by the Company, grant to them the monopoly of running Railroad Locomotives with Anthracite Waste as the only fuel used, of which there are millions of tons, now considered less than valueless, a nuisance in the State of Pennsylvania.

And here we quote from an Essay read before the AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, at Saratoga, September 1st, 1880, by Prof. P. W. SHEAFER, Engineer of Mines, Pottsville, Pa., on the

Anthracite Coal Fields of Pennsylvania and their Exhaustion.

COAL IS MONARCH OF THE MODERN INDUSTRIAL WORLD.

With its wonderfully diversified interests, and their ever expanding development. But, supreme as is this more than kingly power at the present time, comparatively brief as has been the period of its supremacy, and unlimited in the popular apprehension as are its apparent resources, yet already can we calculate its approximate duration, and predict the end of its all-powerful but beneficent reign. This is especially the case with our limited Anthracite.

The noisy trains crossing the valleys and climbing the mountains, all verge, day and night, to these hives of industry, where multitudinous steam engines are hoisting and pumping and breakers crushing. Thousands of miles of railroad thread the surface, and dive into the interior, to roll out the black diamond flood, in millions of tons, to warm and employ the nation.

THE FEARFUL LOSS

Of good material involved in mining and preparing Anthracite, as shown in the accompanying tables, though greatly to be deplored, seems to be almost inevitable.

It is estimated that not more than 66 per cent. of the coal is ever taken out of the mines—that which is brought to the surface is run through a huge structure from 80 to 100 feet high, very appropriately called a "BREAKER," ingeniously contrived for the destruction of coal.

There are over 300 (340) of these immense buildings in the Anthracite region, costing, on an average, \$50,000 each, or on an aggregate of \$15,000,000. To the top of these the coal is hoisted, and then descends through a succession of rolls and screens, emerging at the bottom, in a series of assorted sizes, from huge blocks of lump coal to unmerchantable dust, which forms a grievously large proportion of the whole. This process involves a loss of good coal

EQUAL TO 25 PER CENT.

of the entire quantity mined. No one is paid. It is a total loss to land owner, miner and shipper. The preponderance of waste coal is illustrated by the accompanying tables the Professor has kindly sent us, which show, from actual accounts kept at the mines, that 360,017,817 tons have been sent to market up to 1879, leaving about 90,000,000 of waste outside of the mines ready for shipment or use. Our present consumption is over 20,000,000 annually, leaving 5,000,000 of tons of waste.

It is computed by the best authority that 100,000,000 tons of fine coal and dust now lay near the breakers. *The Gaslight Journal* stated that 106,666,325 tons of dust were then in Pennsylvania. AN EXPERIMENT IN BALTIMORE, Maryland, made in October, 1879, by blowing powdered coal-dust into a boiler-furnace, evaporated the astonishing amount of sixteen pounds of water to a pound of dust, while the lump coal in the same furnace evaporated twelve pounds.

Dr. WM. H. WALL, Secretary of the Franklin Institute, Philadelphia, Pennsylvania, who has thoroughly investigated the subject of the utilization of the coal waste daily accumulating in the anthracite coal regions, states that the desirability of effecting the economical utilization of this waste is universally conceded. To take a moderate estimate it is not far from twenty-five per cent. of the total production. The question has for years attracted the attention of inventors, and of those interested in mining and transportation of coal; others, with every expansion of the industries, depended upon coal for their existence, and therefore, highly sensitive to the price of this commodity, the necessity for its successful solution will be enhanced; thus far, however, it may be safely asserted no process has been devised for this purpose which could be operated with any reasonable amount of success.

The difficulties in the way of effecting the utilization of the anthracite waste are very great in the chemical and physical nature of the material.

WILL THE SUPPLY OF COAL-DUST FAIL? NO! for there are about 100,000,000 tons of it now lying waste in Pennsylvania around the mines, and the annual production is about 5,000,000 tons.

WILL THE PRICE OF IT INCREASE AS SOON AS THERE IS A DEMAND FOR IT? NO! for it costs the companies quite a sum annually to haul it away to the hills, and it can as easily be sent to market, and as the daily supply will much more than fill orders for it, some miners must still haul to the waste hills.

IS IT GOOD COAL? The miners say it is the best as it is the softest and purest, being free from stone or slate.

PLEASE STATE THE SAVING TO A BOSTON RAILROAD COMPANY BY THE USE OF THIS COAL FOR ONE YEAR.

In order to enable a locomotive to burn anthracite waste, the boiler and furnace would have to be improved so as to make steam quickly, rapidly, and very economically; the result would be a saving of one-third of the coal. Now, we will suppose a locomotive is burning 5,000 pounds of coal daily, that would be in 300 days 750 tons; at present price (\$5.00 a ton), is \$3,750; 500 tons of coal-dust at half that price would be \$1,250, saving \$2,500 a year on one engine, NO GAS! NO SMOKE! NO SPARKS!

In conversation with a master-mechanic of an Anthracite Coal Burning and Mining Railroad, after looking at our inventions, he said: "If you can burn anthracite waste in locomotives, I will alter every one of our 500 boilers in any way, shape, or manner. I will put on feed-water heaters, spark and gas burners, new fire-boxes, or any thing necessary. Why, it would save our company \$750,000 a year." There spoke out the true master-mechanic, viewing the improvements in a broad and enlightened sense: it would save his company much money, and it should be done. It was his duty; that is what he was placed there for; not merely to superintend the works, but to save the company money, by adopting any new and valuable improvements.

THE READING R. R. Co. of PENNSYLVANIA, have expended tens of thousands of dollars in experiments in new locomotives to burn small coal, called pea or chestnut.

WHAT WE BURN, BY OUR SYSTEM, IS ANTHRACITE COAL DUST.

As a conductor said to Mr. Berney: "Why, you are burning the very waste of coal. What next?"

Will it pay to burn the Smoke, Gases, and Sparks in Railroad Locomotives ?

To add the smoke-burning attachments to a locomotive while fitting our spark-burner on costs but a trifle. The great saving of fuel by burning the smoke in a furnace is so large that even on the score of economy and paying an enormous interest on the money invested should cause its general adoption.

While it may be some extra trouble to alter the boilers, yet it will pay more for so doing than any other work that can be done on a railroad. The stockholders of these companies invest their money for the sake of the dividends, and employ their officers, mechanics, and laborers to earn not only their wages, but the dividends, by every legitimate means. Is not saving fuel one of them ?

All Master Mechanics know that the more perfect the combustion, the hotter and whiter the heat. It is also a well-known fact that 1450 pounds of coke will, and does, make as much steam as 2240 pounds of coal in common locomotives. **THIS IS BEYOND ALL DISPUTE.** See *English Works on Locomotives.*

Now, if the other 800 pounds of coal could be burned, it would be utilized, instead of sending it out of the stack as a nuisance in the form of smoke and vile-smelling gases, to annoy the passengers and residents along the railroads. The following is a digest of a letter from the BOSTON GAS-LIGHT CO. :—

BOSTON, July 29, 1879.

ALFRED BERNEY, ESQ.—Dear Sir,—I find, in looking over our experiments with coal, out of a ton of 2240 pounds we get about 800 pounds of crude inflammable gas, and 1440 pounds of coke. Yours, etc., C. D. SAMSON.

D. K. CLARK, an eminent English engineer, in his standard work on locomotives, says: That by introducing jets of steam into locomotive fire-boxes with air, the character of the steam, when thus associated with air, is entirely changed in its action on the fire as compared with pure steam. *Its effect is invariably to brighten the fuel and inflame the surface, so that active combustion of solid proceeds above as well as below. The inducted currents of air and steam dash across the surface like flashing cones of light, and they groove out the fuel that lies in their way. The production of Steam is invariably increased, and the Smoke and Gases lessened.*

By our process of burning, we add another element of fuel rarely seen in a fire-box, made by the combination of a crude hydrogen (steam), oxygen (air), carbon (smoke), all intimately mixed in the fire-box. They form the hottest flame next to hydrogen. That is, we make CARBONIC DIOXIDE GAS; OR, AS PROF. CRAVEN STATES, A DILUTED HYDROGEN GAS.

Mr. M. N. Forney, in his catechism on the locomotive, states:

“From a carefully made experiment, it was found that the total heat of the combustion of one pound of carbon, when converted into carbonic oxide, was 4,400 units, whereas, when it was converted into carbonic dioxide, 14,500 units were given out. It will thus be seen that it is extremely wasteful to burn coal without a sufficient supply of air: even when no smoke is seen from the stack, the combustion is very imperfect as now made.”

With our steam jets, we supply another important chemical to supply the place of a very large amount of air, and make almost perfect combustion.

Extract from an old Ex Master-Mechanic's Letter.

Every Master-Mechanic knows that, if his locomotives are kept in first-class order, he can save the cost of it in the economy of fuel alone, besides the safety of the engine and train; but the officials (seldom mechanics) almost always keep that department down (as to expense), but pay enormous coal and wood bills without a question as to why they are so large, thinking that wood and coal must of course be used, or the cars cannot be hauled.

David Upton, Esq., Master-Mechanic on the New York Central R. R. in 1859, proved that the machine-shop could save money, if allowed to put on improvements and keep the locomotives in order.

From the Scientific Artisan of January 6, 1859.

The New York Central R. R. (locomotives) was run for the year 1858 with an expenditure of \$549,178 for fuel, against \$847,853 for 1857. SAVING \$298,675 IN ONE YEAR. Miles run in 1858, 3,942,547; 1857, 3,984,920. Cost per mile in 1857, 21½ cents; in 1858, 13 cents. We regret that the process by which such an extraordinary saving has been effected is not given: it would be of the greatest value to other roads.

As Mr. David Mathews had sold the Company his Patent Spark Consumer three years before that, he wrote to Mr. Upton, M. M., asking for information. The following letter was received in reply to this:—

ROCHESTER, N. Y., January 17, 1859.

MR. DAVID MATHEWS, Philadelphia, Pa.:

Dear Sir,—Yours of the 12th inst. is received, as also pamphlets referred to, for which I am greatly obliged. The economy of fuel by locomotives upon this road is due in part to the fact that the engines are kept in the best possible condition; the fire-boxes and boilers kept tight and well lagged, radiation from heated surfaces prevented by all possible means, and the working parts made to reach their maximum of efficiency. BUT A GREAT PROPORTION OF IT IS DUE ALSO TO THE GENERAL USE OF YOUR PATENTED CHIMNEY, WHICH IS AN EXCELLENT INVENTION, AND VERY SERVICEABLE IN THIS REGARD.

DAVID UPTON, M. M.

Mr. Mathews' Stack was a hideous monstrosity; was only used with wood, and went into disuse after soft coal was used; and the result has been, no other has taken its place until this new one of Mr. Berney's.

From a page in *The Railroad Gazette* of February 27, 1880, on *English vs. American Locomotives*:

“If Mr. Biceron had mastered this subject, he would have stated that the consumption of American engines is, per ton per mile, hauled from 50 to 100 per cent, in excess of that required by English engines for the same work, and for this statement we are indebted to the Master-Mechanics' Institute, a society in effect of locomotive superintendents.”

A committee appointed by this society, to inquire into the cause of the want of economy in American engines, actually advocated the purchase of an English engine, that experiments might be made with it, in order to ascertain how, and why it was, that such lines as the Settle & Carlisle could be worked with an expenditure of fuel so small that nothing to parallel it could be found from one end of the 78,000 miles of railway open in the United States to the other.

There is little reason to doubt, that much of the economy of English locomotives is due to the admirable repair in which they are maintained; leaky valves are not tolerated, blowing piston-rings are at once replaced, the engines are kept quite true, and the old adage of a stitch in time saves nine, is constantly acted upon.

But this is not the case in America, and in consequence a great annual mileage is got out of locomotives, but for economy of fuel and oil, there is no comparison between English and American engines.

The Question of Economy in the burning of Fuel must hereafter be the paramount one for all persons in charge of the motive power of Railroads, Steamships, and other Companies, and in no way can coal and wood be saved as easily as by the use of our inventions.

THE VARIABLE EXHAUST TIP.

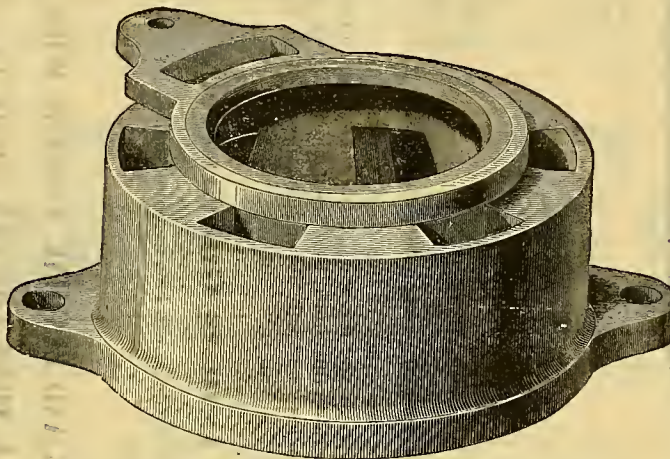
It is Simple, Cheap,
and Durable.

**WILL LAST MANY
YEARS.**

Cannot Stick, if Used Only
Once a Week.

GIVE ONE A TRIAL.

**THIS ONE IS
PERFECT.**



THE ABOVE ENGRAVING SHOWS IT ONE-THIRD SIZE.

**SAVES FUEL, MAKES
STEAM FREELY.**

Can be Regulated so as to
Carry Steam at

100, 110, 120,
130, 140

**OR MORE POUNDS
PRESSURE.**

Many Locomotives have
them on.

WITH VARIABLE EXHAUST TIPS, THE ENGINEER AND FIREMAN HAVE COMPLETE COMMAND OF THEIR FIRE, AND, OF COURSE, THE STEAM. THEY CAN BURN POOR COAL, FINE COAL, GREEN WOOD, OR DRY WOOD. IN FACT, THERE WILL BE NO EXCUSE FOR LOST TIME ON ACCOUNT OF THE FUEL.

Every engineer should have the control of his Exhaust Tip as much as the throttle-lever or power brake. If he is worthy of being trusted with cars filled with human lives and valuable freight, he is fit to have charge of the blast that makes the steam; and the experience of some years as to the working of variable Exhaust Tips convinced the undersigned that they were important to have in use upon LOCOMOTIVES, FIRE ENGINES, PORTABLE, STATIONARY and MARINE ENGINES, where the Exhaust Blast was depended upon to cause a vacuum in the smoke-arch and keep the fire burning.

Why they have not gone into general use is, that all previous ones were liable to stick, and were too cumbersome and costly. This Tip has overcome all these difficulties, and now we offer a simple Tip, consisting of an ordinary one cast with ports in it fitted into another with ports to correspond, with a handle attached. It is simplicity itself.

BOSTON & LOWELL R. R. DEPOT, BOSTON, Sept. 20, 1880.

To whom it may concern:

Twelve or more of the locomotives of this road have the Variable Exhausts attached, which work admirably, making a large saving of fuel and of back pressure, which latter largely increases the efficiency of the locomotive, making also another saving. Our Master Mechanic, and the Engineers who run the locomotives which have the variable exhaust attached, speak of it in the highest terms of praise. We shall increase the number as fast as we can conveniently.

WM. M. PARKER, Supt. B. & L. R. R.

ROUND-HOUSE, EAST CAMBRIDGE, MASS., Jan. 30, 1880.

I had the Patent Variable Exhaust put on an engine 16x24, in April, 1878. It gave good satisfaction, and is in good order to-day, having had no repairs or trouble with it.

A. D. BAILEY, Engineer.

BOSTON & LOWELL RAILROAD,
EAST CAMBRIDGE, MASS., Jan. 31, 1880.

Test was made on a Mason engine, 17x24, for seven days, with fixed Exhaust, then seven days with Variable Exhaust; result, saving 481 lbs. of coal per day. Engine carried her water better, run easier, made better time.

M. R. WILBUR, Engineer.

WINTHROP JUNCTION, Aug. 12, 1879.

Gentlemen:—I put on your Exhaust on our locomotive No. 2 last May, in which it has been in use every day, and has given entire satisfaction and a saving of 15 per cent. of coal. I have it on another locomotive, and I find it gives the same result as the first one. We never had any trouble with them; they work as free to-day as they did the day they were put on.

J. L. FOLSOM, Master Mechanic of the
Boston, Revere Beach & Lynn R. R.

THE VARIABLE EXHAUST TIPS are included in our Smoke and Spark Consumers. Licenses at Reduced Rates.

BERNEY'S SAFETY VALVE MUFFLER AND FEED WATER HEATER.

This neat, cheap, and economical muffler is easily attached to a safety valve, and the arrangement to prevent noise, and regulate the heat in the tender is perfect, avoiding the objections to blowing back steam into the tender. A trial is earnestly solicited.

BERNEY'S FEED-WATER CIRCULATOR.

This invention can be applied inside or outside the boiler, and is inexpensive as to construction. All Engineers who have studied the principle of Circulation admit that it is of vital importance to perfect the generation of Steam economically, to cause an artificial and rapid mingling of the extreme hot and cool water from one part of the boiler to the other. It assists the Steam to rise to the top of the water. Another valuable feature of this invention is this: That in pumping or injecting in the feed-water it does not reduce the force of the Steam, as indicated by the Steam-gauge.

This remarkable proof of the value of the invention will be appreciated by all Master Mechanics, Engineers and Firemen.

THE CIRCULATOR WILL BE APPLIED BY THE GLOBE CO., WHEN DESIRED, WITH THE SPARK CONSUMER.

Drawings sent on application. Experimental Tips, which are sent to any company, free of charge, for trial, address

THE GLOBE CO., Boston, Mass.

THIS ENGRAVING IS PRINTED ON OUR PREFERRED STOCK.

THIS IS PREFERRED STOCK
AND IS
LIMITED TO \$ 250,000
ON EACH MILLION OF CAPITAL
AND SHALL RECEIVE A DIVIDEND
OF TEN PER CENT, ANNUALLY, OUT
OF THE NET EARNINGS OF THE
CORPORATION, AND THEN

\$25.

THIS PREFERRED STOCK
SHALL
SHARE IN ANY FURTHER
DIVIDENDS AFTER THE COM-
MON STOCK HAS RECEIVED A
DIVIDEND OF TEN PER CENT
ANNUALLY BOTH KINDS
EQUALLY.

A 10 Per Cent Stock for \$25.00 a Share.

DIVIDEND PAYABLE QUARTERLY.

Think of it,—this Stock will no doubt pay its Owners 50 Per Cent a Year.

WE REFER, BY PERMISSION, TO A FEW OF OUR STOCKHOLDERS:

MRS. M. E. YOUNG,	Cambridge, Mass.
F. L. MERRICK,	Springfield, "
MISS ISABELLA L. GRAY,	Stonclann, "
MRS. C. E. HOLMES,	" "
MISS M. E. BERNEY,	Brooklyn, N. Y.
ALEX. A. PETTIGREW,	Gloucester, Mass.
DANIEL F. SHEEHAN,	Lawrence, "
HERBERT HANSON,	Gloucester, "
MISS M. A. BERNEY,	Charlestown, "
MRS. H. DUTTON,	" "
JULIUS WOLFF,	Boston, "
NATHAN DAVIS,	Groton, "
ASA WELLINGTON,	Quincy, "
DAVID BURHARDT,	North Troy, Vermont.
B. WILKINSON,	Boston, Mass.
MISS C. C. WOODARD,	Stoneham, "
MISS S. T. BENNETT,	Boston, "
MISS S. M. SKINNER,	" "
E. R. MORRISON,	" "
MRS. E. CLARK,	" "
MISS L. A. LORING,	" "
MRS. J. L. WHITE,	" "
C. A. WONSON,	Gloucester, "
C. E. SAMMONS,	Chelsea, "
JOHN A. CARR,	Boston, "
N. C. JAMESON,	" "

MISS J. M. BERNEY,	Williamsburg, N. Y.
J. H. HATER,	Boston, Mass.
B. DUTTON,	Boston, Mass.
D. WILLIAMS,	" "
J. TABOR,	" "
MRS. F. LUCAS,	" "
A. T. SMALL,	Holbrook, Mass.
MRS. H. KIMBALL,	Chicago, Illinois.

And many others who have from four to one hundred shares each.

We desire the reader to inquire of any of the above persons, for all of them are personally acquainted with the officers and directors of the Company, and to impress on the minds of all who wish to invest in this stock, that the majority of this stock is held as trust funds for a solid, permanent and sure investment, for no other Company can pay such enormous dividends as this will.

10 Per Cent is Guaranteed,

and even 50 per cent, the directors believe, will be a common dividend, for our patents are being extended all over the world.

**INQUIRE, INVESTIGATE AND EXAMINE, AND YOU WILL SURELY
INVEST ALL THAT YOU CAN SPARE IN**

The Globe Company.

Make all Checks, Drafts, Postal Orders, &c., payable to the order of

GEORGE E. DUTTON,

Secretary.

TO RAILROAD OFFICIALS.

Do you desire to Save your Fuel? To have your Locomotives run Clean, and at One-Third of the expense for Coal or Wood?

IF SO, TRY THE

BERNEY

SPARK CONSUMER AND SMOKE PREVENTER

PATENTED IN AMERICA AND EUROPE.

APPLIED, IF NECESSARY, IN 24 HOURS, at an expense for Castings and Labor of LESS THAN \$150.00.

Royalty, \$300 for Spark Consumer, or \$500 for Spark Consumer and Smoke Preventer, for each Locomotive.

The only practical inventions in the world to do the work as stated. Will last as long as the Locomotive.

As our orders are far ahead of our present facilities to make the Stacks, the orders will be filled as they are received: First come first served.

[From the Chicago Tribune, July 21, 1880.]

THE SMOKE NUISANCE.

The movement to abate the coal-smoke nuisance is becoming general in this city, and it is high time. Steps to this desirable end would have been taken long ago but for the prevailing belief that it was impossible to stop the besmearing and befouling nuisance; but, since it has been amply demonstrated that it can be abated, the public demand for its suppression grows in intensity. The parties who offer the most resistance are the railway companies. They rest their objection on the grounds of impracticability. They admit, however, that careful and intelligent firing will greatly reduce the vast volumes of dense black smoke emitted by their engines within the city limits. But there will be no systematic effort to enforce careful stoking unless there is an ordinance forbidding the smoke nuisance under penalty. Such an ordinance, with the Health Department charged with the duty of enforcing it, will impel the railroad people to employ intelligent and vigilant efforts to mitigate if not totally abate the nuisance.

The rendering and other stink factories declared some years ago that the offensive odors their establishments produced were impossible of suppression, and that if the city authorities prosecuted them severely their business would be broken up, and enormous pecuniary loss would be inflicted upon them. But the city insisted that the stinks must be suppressed, and they were suppressed, and the rendering business was neither crippled nor killed, but prospers and flourishes. So it will be with the coal-smoke nuisance, when the City Council passes the proposed ordinance, and the Health Department proceeds to enforce it. The head of that Department is a scientific man, fair in his actions, clear in his judgments, and who will do nothing rashly or maliciously; nor will he demand impossibilities; but he will work away at the problem, persevering until he clears the atmosphere of Chicago of the grimy clouds of coal smoke that now so greatly annoy its inhabitants, and injure their health and habitations.

Some of the objections of the railroad men are without foundation. For example, that the ordinance would force them to cease burning Illinois coal on their roads. The ordinance does not apply to smoke generated outside of the city limits, and there is surely nothing impracticable in using coke within the city limits. A few bushels can be carried on each locomotive to be consumed while the engines are passing in and out of the city. This is done in all cities in Great Britain, and, we believe, on the Continent of Europe. The difference in the cost of such fuel burned by the engines in the city would be a very trifling matter when compared with the benefit the public would derive therefrom. The switching engines create a great deal of almost unbearable nuisance; why should not they be fed upon coke, and their torrents of black, choking, sulphurous smoke, be abated at once? Some of the railroad engineers interviewed expressed the opinion that the "Berney apparatus," how so successful

on the Old Colony Road in New England, would prove a failure if applied to Illinois coal; but they do not know this to be a fact; none of them have yet tried it. They therefore speak without actual knowledge. Let them invite Berney to come here and attach his device to a few locomotives, and see whether or not it will consume the smoke of Illinois coal. It will be soon enough to pronounce against it after it has been fairly and fully tested. If it succeeds in doing here what it does in Boston, it will not only free this city from the smoke, spark and cinder nuisance caused by a thousand locomotives running to and fro all over Chicago, but it will save the companies large sums in the item of fuel and in damages from fires caused by sparks; and it will be a most grateful deliverance to the travelling public from the pest of smoke in their faces and cinders in their eyes, ears, hair and clothes.

Col. Berney did go to Chicago, and all the good people of that city were kindly informed that so far as smoke was concerned he failed. But the real facts were that the Colonel did not have his inventions covered with patents,—that is, the plans that would prevent Illinois coal from smoking; he preferred that it should be announced as a failure than show his hand until his rights were all secured in America, Canada and Europe, and very few men would have had the moral courage to turn their backs on a city of half a million of people, who expected him to burn all the smoke of the locomotives, tugs, etc.

The 29th of Aug., 1880, Col. Berney left Chicago. Sept. 20th, less than a month, he arrived at the Howard House, Washington. Let the official notices from the Patent office state the rest:—

DEPARTMENT OF THE INTERIOR,
ISSUE DIVISION, U. S. PAT. OFFICE,
WASHINGTON, D. C., Sept. 23, 1880.

Sir:—Your application for re-issue of Patent No. 163,363 for improvement in SPARK ARRESTERS FOR LOCOMOTIVES has been examined and allowed.

Serial No. 14, Sept. 23, 1880. FOR CIRCULATORS IN STEAM BOILERS.

Serial No. 17,488, Sept. 25, 1880. FOR SPARK ARRESTERS.

Serial No. 17,578, Sept. 28, 1880. For Heating and Circulating Water in Boilers.

Serial No. 7, 11, Sept. 28, 1880. Inserting Tubes in Boilers.

Serial No. 17,776, Sept. 29, 1880. For Grate Bars.

Serial No. 17,646, Sept. 29, 1880. For Spark Arresters and Consumers.

Serial No. 17,654, Sept. 29, 1880. For Spark Arresters and Smoke Consumers.

Serial No. 17,699, Sept. 30, 1880. Smoke-Preventing Furnace.

Serial No. 17,964, Oct. 1, 1880. Saddles and Stacks (for Smoke and Spark Consumers).

Serial No. 17,963, Oct. 1, 1880. Smoke-Consuming Furnace.

Serial No. 18,100, Oct. 7, 1880. Spark and Smoke Consumer.

Serial No. 18,173, Oct. 9, 1880. Steam Mufflers. All have been examined and allowed; on payment of final fees the patents will be issued.

M. E. MARBLE, Commissioner of Patents.

Twelve patents in twenty days, embodying sixty claims, also five more to be applied for, prove that something had been invented. The statements below will prove whether the inventor believed in his work:—

THE GLOBE CO.'S SHOPS, 83 HAVERHILL ST.,
BOSTON, MASS., Nov. 18, 1880.

The pattern makers employed at these shops have made entirely new and costly patterns for Col. Berney's new Spark Consumer and Smoke Preventer. In a simpler form castings were sent to the Cumberland & Pennsylvania Railroad, and they have proved, by the letters from the Master of Mechanics of that road, a perfect success every way. I have no doubt of it.

G. W. HOLMES, Foreman.

CUMBERLAND & PENNSYLVANIA R. R.,
MT. SAVAGE, MD., Nov. 14, 1880.

Dear Sir:—I feel that I cannot speak too highly of Berney's SPARK AND SMOKE CONSUMER. In the first place, it is correct in principle and mechanical in application, positive in its results. It does all they claim for it, returning 95 per cent. of the Sparks back to the fire-box. THEIR NEW PROCESS OF BURNING THE SMOKE IN THE FIRE-BOX WITH HOT AIR IS VERY GOOD,—YOU ARE NOT TROUBLED WITH VOLUMES OF SMOKE, RUNNING, OR AT STATIONS. I am sure it is the best Spark and Gas Consumer in the market. I am now using it on our passenger engines, burning fine, soft, bituminous coal, with grades 163 foot to the mile. Our engines steam just as well, if not better, USING A GREAT DEAL LESS COAL. IT CAN BE PUT ON ANY ENGINE IN 24 HOURS. I must say, it is a positive preventive from fires along the road, even in the driest time. I should feel perfectly safe in hauling hay or cotton in open cars with these Stacks. I am sure you could not do better than adopt the Berney Stack. I have tried them all. I would agree to run one of our engines 200 miles with any engine using the EXTENSION SMOKE-BOX 10 miles, and not have as many Sparks on the platforms by one-half. Hoping I have answered your inquiries, I am

Yours very respectfully,

N. W. HOWSON,
M. of M., C. & P. R. R.

The above is a copy of a letter sent by Mr. Howson to another Master Mechanic, and was sent by the receiver to the Globe Company. We need no further recommendation, and yet Mr. Howson has not our PARAGON STACK that is destined to revolutionize spark and smoke burning.

Mr. Howson writes to Col. Berney Nov. 13, 1880:

"I have examined your drawing of new Stack, but allow me to say that what you have HERE is all you want. It does the work, and that is enough."

Presented by **THE GLOBE COMPANY, BOSTON, MASS.**

CAPITAL, \$1,000,000. pay 10 Per Cent. Dividends Quarterly. SHARES, \$25 EACH.

THE GLOBE PERPETUAL ALMANAC.

EXPLANATION.
 Look at the top for the century; then to the right or the left for the year; and in a line with that, directly under the century, is the Dominical Letter for the year.
 Under the given Dominical Letter in the lower part of the table, find the day of the week, and in a line with it, in the calendar, you have the day of the month.

TEN PER CENT. A YEAR RETURNS THE CAPITAL IN TEN YEARS.
TIME IS MONEY.

YEARS.	
6	17 23 28 34
7	12 18 29 35 40 46
8	14 25 31 36 42
9	15 20 26 37 43 48
4	10 21 27 32 38
5	11 16 22 33 39 44 50

CENTURIES.

2000	1800	2100	1700	2200	1900	2300
A	B	C	D	E	F	G
C	A	B	C	D	E	F
F	C	A	B	C	D	E
E	F	C	A	B	C	D
D	E	F	C	A	B	C
C	D	E	F	C	A	B
B	C	D	E	F	C	A

THE TIMES ARE CHANGED, AND WE ARE CHANGED WITH THEM.
FORTUNE FAVORS THE ENTERPRISING.

YEARS.											
51	56	62	73	79	84	90					
57	63	68	74	80	85	91	96				
52	58		69	75	80	86					
53	59	64	70	81	87	92	98				
54		65	71	76	82	93	99				
55	60	66	72	78	83	88	94				
61	67	72	78								

EXPLANATION.
 N.B.—Every Leap-Year has two Dominical Letters; the latter only is designated in this table, as the first serves only till the close of February: e.g., 1848 has B. and A. At the beginning of every century Leap-Year is omitted, except every fourth century—1600, 2000, etc., being Leap-Years, and the intervening three centuries exempt from the common rule.

DOMINICAL LETTERS.

January, 31.	February, 28.	March, 31.	April, 30.	May, 31.	June, 30.	July, 31.	August, 31.	September, 30.	December, 31.
1 8 15 22 29	5 12 19 26	5 12 19 26	2 9 16 23	30 7 14 21 28	4 11 18 25	2 9 16 23 30	6 13 20 27	3 10 17 24 31	
2 9 16 23 30	6 13 20 27	6 13 20 27	3 10 17 24	1 8 15 22 29	5 12 19 26	3 10 17 24 31	7 14 21 28	4 11 18 25	
3 10 17 24 31	7 14 21 28	7 14 21 28	4 11 18 25	2 9 16 23 30	6 13 20 27	4 11 18 25	1 8 15 22 29	5 12 19 26	
4 11 18 25	1 8 15 22 29	1 8 15 22 29	5 12 19 26	3 10 17 24 31	7 14 21 28	5 12 19 26	2 9 16 23 30	6 13 20 27	
5 12 19 26	2 9 16 23 30	2 9 16 23 30	6 13 20 27	4 11 18 25	1 8 15 22 29	6 13 20 27	3 10 17 24 31	7 14 21 28	
6 13 20 27	3 10 17 24 31	3 10 17 24 31	7 14 21 28	5 12 19 26	2 9 16 23 30	7 14 21 28	4 11 18 25	8 15 22 29	
7 14 21 28	4 11 18 25	4 11 18 25	1 8 15 22 29	6 13 20 27	3 10 17 24	8 15 22 29	5 12 19 26	9 16 23 30	

The above Almanac is an interesting study, and is convenient. As a mathematical problem, it must have taken a long time to have solved it. After a little use it is as simple as a common almanac. Correct and handy, and good for five centuries to come.

NO SPARKS, DUST, SMOKE OR GAS HEREAFTER FROM FURNACES.

10 Per Cent. Dividend Paid Quarterly

ON THE FIRST DAYS OF

February, May,

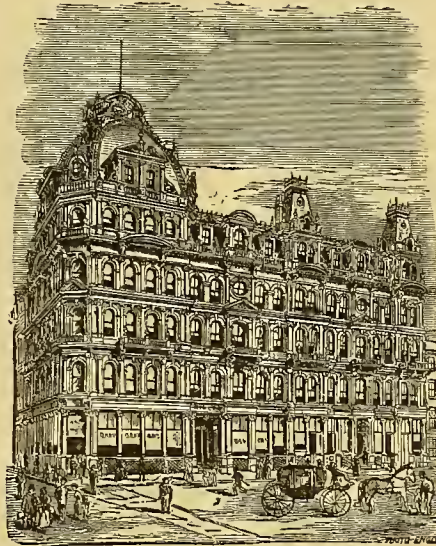
August, November,

— BY THE —



COMPANY,

Hartford, Conn.



[RIALTO BUILDING.]

— BY THE —



COMPANY,

Hartford, Conn.

At their Office, Rialto Building, 131 Devonshire St., Boston, Mass.;
or Post Office Orders or Checks Sent Anywhere.

STOCK, \$25. PER SHARE.

DON'T FAIL TO SECURE SOME OF THESE SHARES.

A GOVERNMENT BOND PAYS BUT 4 PER CENT. WE PAY 10 PER CENT. ON THIS STOCK, and this Stock will go up to \$200, or more, within a year. Any 10 per cent. Stock of Banks, Railroads, or Manufacturing Companies, is worth from \$160 to \$200 a Share. Our Company is young yet, but it pays more dividends than the average of old companies.

What is more true than "NOTHING VENTURE, NOTHING GAIN?" BUT IN THIS CASE IT IS NOT A RISK, IT IS A CERTAINTY.

JOSEPH KELLY, President.

GEO. E. DUTTON, Secretary.

A. B. CURRIER, Treasurer.

ASA WELLINGTON, Counsel.

A. BERNEY, General Manager.

DIRECTORS.

A. B. PUTNEY, of Boston,
A. PETTIGREW, of Gloucester,
JOHN A. CARR, of Boston,
H. WONSON, of Gloucester,
A. WELLINGTON, of Quincy,
J. B. WILLIAMS, of Boston,

EZRA MILLER, of New York,
A. BERNEY, of Boston,
A. T. SMALL, of Holbrook,
O. L. YOUNG, of Cambridge,
H. P. STEVENS, of Boston,
N. A. DUTTON, of Boston,

G. E. DUTTON, of Boston,
JOSEPH KELLY, of Providence,
WM. CURRY, of Boston,
B. DUTTON, of Charlestown,
NATHAN DAVIS, of Groton.

The Company will have their business, for convenience and profit, divided into Branches, as follows:—
Northern Division at Montreal, Canada; Southern Division at Atlanta, Georgia; Eastern Division at Boston, Mass; Western Division at Chicago, Illinois; European Division at London, England, and others hereafter, as our patents cover the Globe.

REASONS WHY

A MAN INVESTED IN THE GLOBE COMPANY.

PARKER HOUSE, BOSTON, MASS., Nov. 29, 1880.

My Dear Wife:—I enclose your certificate of The Globe Company for forty shares of Preferred Stock, at \$25 each, making the \$1000 you wanted invested in the best paying and safest security I could find in Boston.

On my arrival here I found that Government Bonds were very high, and only paying 4 per cent.; that any good railroad shares, paying even 6 per cent., were selling at \$125,—the Boston & Albany R. R. at \$163; Savings Banks paying only 4 per cent. interest. Hearing of other Stocks I examined several, and finally arrived at THE GLOBE COMPANY'S offices, in one of the finest buildings in the city, directly opposite the Post Office. Entering a beautiful marble hall, on one side was the Elliot National Bank, on the other the Pacific National Bank, with whom The Globe Company deposits its cash. Above them I walked into the offices of THE GLOBE COMPANY. They were carpeted with Brussels carpets, and furnished with substantial black walnut chairs, desks, tables, and a large steel safe; many engravings of locomotives, and other machines, adorned the walls.

In the first one is located a fine, portly old gentleman,—Judge Wellington, the Counsel of the Company, who looks after the legal affairs of the Company. In the next, I saw the Treasurer, Allen B. Currier, Esq., who has a large hat and cap store at 709 and 711 Washington Street, Boston. Mr. C. devotes a few hours a day to the financial welfare of the Corporation, with all the power that lies in him. In another office, the General Manager, Col. A. Berney, was engaged with the President, Joseph Kelly, Esq., a noble looking gentleman about sixty years old, upon whose face God had written in unmistakable language, "Here is my noblest work—an honest man." Mr. K. is a railroad official of 26 years' service. The Secretary, George E. Dutton, was busy, with his assistant, sending off numerous pamphlets and letters. Every one was busy.

The President inquired my business, begged me to be seated, which I did, and I told him I came to inquire as to THE GLOBE CO.'S STOCK. "Well," said he, "any questions you desire to ask I will cheerfully answer." I told him I desired to know all about it. "Well," said he, "then I will tell you all.

OUR COMPANY

was chartered May 22d, 1879, and is unlimited as to time. Its Capital is \$1,000,000, of which \$100,000 belongs to the Company, in the shape of

TREASURY STOCK.

This Stock is sold for a cash capital, at par, and never less, under any circumstances.

We pay 10 per cent. dividends,

or interest, quarterly, in cash here, or send it in checks, postal orders, or by express, all over the United States or Canada.

As to the certainty of these dividends continuing or increasing,

let me tell you how we do our business. We own or control the monopoly of the only practical way of preventing smoke and sparks from locomotives all over the world; and as there are over 100,000 of them, this will pay us the enormous sum of \$30,000,000. Now, supposing that we only fitted one-third of them, that would be \$10,000,000.

But this is not all.

The Smoke Preventer we charge \$200 extra for; then there are the furnaces, steamships, boats, tugs, etc. So you see that we can and will make immense sums of money.

Will the Railroads put them on? Certainly.

Our counsel has given his written opinion that they will be compelled to by law, and here is what he states:

Persons using furnaces with stacks are bound to use such appliances as will, as far as possible, prevent the emission of sparks and smoke to the annoyance of others, and they are liable for nuisance if they fail so to do.

Railroad Corporations are common carriers, and, as such, they are by law bound to provide, by all suitable means, for the safety, comfort and convenience of passengers; they are bound to make use of such appliances as will secure to passengers, as far as possible, pure air, quiet, and freedom from the annoyance of sparks and smoke.

But we prefer to appeal to their self-interest,

for we can save enough fuel in six months to pay for all charges by us,—royalty and mechanical expense. We NEVER fail to save the coal, make steam, or do all we say we can do.

Now, as to our expenses.

OUR SHOPS earn all they cost to run. Our income is continuous, without any expense, except for the first engine.

We shall extend the work all over the globe,

and at London, England, we shall have a branch office in January; in Montreal, Canada, in February; in Chicago, Ill., in March; in Atlanta, Ga., in April; and as much sooner as we can. We only lack ready money, and this is now coming in fast.

But a few shares more of the Treasury Stock remains to be sold.

As to the stock held by the original holders, they keep it as an investment. I know that over half the Stock is not to be sold for years to come.

As a solid investment

it cannot be equalled. Why, Mr. Berney and myself have been at these inventions for eight years, and expended thousands and thousands of dollars before the inventions were perfected. Mr. B. never faltered; and, under all kinds of discouragements, went on to triumph. These letters prove it:

CUMBERLAND & PENNSYLVANIA R. R.,

MT. SAVAGE, MARYLAND, Nov. 23, 1880.

A. BERNEY, Esq., General Manager:

Engine 27 is out; works perfect. Steams splendid, runs clean, light on fuel; Smoke Preventer is perfect,—nothing can compare with it. President Mayer, General Superintendent Burwell, and Master of Machinery, are satisfied and surprised.

Z. P. BURHARDT, Chief Engineer Globe Co.

CUMBERLAND & PENNSYLVANIA R. R.,

MT. SAVAGE, MD., Nov. 24, 1880.

COL. BERNEY:

You have the best Spark and Smoke Consumer in the world, with none to beat it. It is a perfect piece of work in every particular. There is not a railroad in this or any other country but what must have it, and will have it at any price.

N. W. HOWSON, M. of M., C. & P. R. R.

With such facts as engines on a railroad at work doing as above stated, we know railroad companies will put them on."

"But, Mr. President," said the General Manager, "you have said nothing about our locomotives for burning anthracite coal dust. You know I consider them the most valuable of any of them. That smoke and spark consuming will not pay this Company as much as the dust will."

"Why, sir," said he, turning to me, "when I inform you that there is more coal dust dumped to waste in Pennsylvania than would be required to furnish fuel for every locomotive in the United States, and that our Company has the sole control of the patents to burn it, you can see at a glance that we have the field all to ourselves. Tell me of a company that has paid 10 per cent. dividends from its net earnings in two months after commencing business, or one that can show contracts and facts that will continue the 10 per cent. Show me a company that its owners valuntarily and unanimously decide that, as long as it runs, \$250,000 shall have the 10 per cent. sure, even though \$750,000 never does. But, mark my words," he said, in a voice of one who seems inspired, "we will pay from 10 to 50 per cent. in 1881, and for years to come.

OUR BOARD OF DIRECTORS

are all business men, clear-headed. Our officers work for low salaries. Our expenses are carefully kept down to the lowest point consistent with good management.

We do not owe a dollar. We cannot run in debt. Our Charter and By-Laws forbid it.

Over half of this Stock is held in trust as an investment for orphans, and cannot be sold. If we, who have spent our time and money for eight years, are not afraid of its paying, why should you be?

One stormy evening, as I stepped into the costly steamer 'Providence' from the Old Colony Railroad to go to New York, I said to Capt. Simmons, 'will you dare to sail to-night?' Said he, 'yes, sir!' The next morning we arrived in New York. I felt if the Captain would risk his life, the passengers and crew, and the million dollar boat, I could not see any reason why I should not go. So I say to you, if we spend our lives and money, and we run the ship carefully around the globe, enriching all who embark with us, you can afford to go."

I had no more to say; for, as the Manager truly said, I never saw such a prospect for making money, and doing good; and in a few months the people will wonder why they did not invest in The Globe Company's Stock, which you see is neat, and signed by the President, Secretary and Treasurer.

At the request of the officers I went to the Old Colony R. R. Round-House, South Boston, and there was shown over twenty splendid locomotives, all equipped with Mr. Berney's old invention; yet that was spoken of in high terms by the engineers, firemen, and Mr. Taylor, M. M.

I only hope that all the railroads our way will soon put them on, so that travelling will not be such a nuisance.

Your affectionate husband,

ARTHUR B.

IS IT MY DUTY

To invest some money in THE GLOBE COMPANY, of Boston, Mass? Is the thought often revolving in many a man and woman's brain?

We, the Company, say, YES, IT IS YOUR DUTY. FIRST—Because your capital furnishes means to develop great and meritorious inventions that will pay you more interest than any other investment that you can make.

Doubt is often expressed as to the feasibility or propriety of men and women investing in stock companies. We say to all, examine for yourselves into any company that invites you to deposit your dollars for their stock. Then, if satisfied, it may as well be invested in such sound companies as THE GLOBE COMPANY, as in savings banks that pay a very low rate of interest.

When we are requested to explain why we can pay Ten (10) per cent. dividends upon our Stock, we can easily do it. For the purpose of procuring money to carry out the grand plans of the Company,

\$100,000 Worth of the Stock

was placed in the treasury to be sold for working capital. The proceeds of its sales are used to push the business. Part of this Stock was declared

Treasury Preferred Stock,

and should be paid a dividend of 10 per cent. previous to any other Stock receiving a dividend, as long as the Company existed, and for all dividend purposes up to 10 per cent. The holders of that Stock need not care what the capital of the Company is, or what other Stock is Preferred Stock. THE TREASURY STOCK is first, always, to receive dividends every quarter.

The Earnings of the Company

are almost net earnings. Those who use our inventions pay royalties. That is, after a trial on a railroad and the acceptance of the license, the Company receives not less than \$300 for each and every Spark Consumer, and that is divided among its owners.

Call and investigate for yourselves, or write.

OBJECT OF THE COMPANY.

The Corporation was established with a broad and liberal Charter, to purchase and develop any new inventions of merit and profit. The incorporators and directors are intelligent, far-seeing business men. They saw the want of a Grand Company, to bring CAPITAL and INVENTION together; and this they have done, and will do, by purchase or contracts. The Corporation will introduce any great invention, as they are now doing with the present inventions, which will be so beneficial to the public and all interested.

It is a well-known fact that about seventy-five (75) per cent. of the fuel used for Railroad Locomotive Boilers is lost by radiation, using cold water, lack of circulating apparatus, waste steam from safety valves, and, most of all, about fifty-five (55) per cent. is sent out of the stack in the form of GREASY BLACK SMOKE that smears the clothes and skin of the passengers and employes, ruins the varnish, paint, plush and fixtures of the cars, annoys the dwellers along the line of the railroads, and sickens the weak and worries the well with its vile smelling, unhealthy sulphurous gases. Its red-hot coals, called sparks, destroy, annually, hundreds of thousands, even millions of dollars worth of property, and torment the passengers by filling their eyes, hair and clothing with the dirt. Thousands of tons of coal are thus wasted in the most injurious manner.

All this can be prevented by the Company's inventions, and at least one-third of the fuel saved.

The expense for work and materials is but about \$150, and will be kept in order by the Globe Company 10 years for \$50, each, extra.

OUR COMPANY HAS A CHARTER THAT IS STRONG, AND CAN LAST AS LONG AS DESIRED. The main points will be, economy in expenditures, vigilant and prompt attention to details. Low salaries will be the rule, as the principal officers are the largest interested.

The fact that the most of the stock is held as an invested capital by families, not to be sold at any price, is one of the best guarantees to insure the other owners that their interests will not be swamped by speculators.

The management believe in the invention, and have a pride in having it adopted in all its perfection.

The great profit to be made by the practical use of them by railroad companies, will cause them to be eagerly sought for.

The Company will soon have its agents travelling all over the country, and its own locomotive and open car running to show how clean and economical one can be run. The public will then insist upon their being used, by legal enactment.

But the Corporation is not confined to one or two inventions, but have under consideration the purchase of others as valuable.

THIS STOCK IS AS PERMANENT AS ANYTHING CAN BE. THE PREFERRED STOCK IS ONLY ONE QUARTER OF THE CAPITAL, and must receive 10 per cent. interest before the Common Stock can receive a cent of interest.

COPY OF THE STOCK.

Capital Stock, \$1,000,000.	ORGANIZED UNDER THE LAWS OF CONNECTICUT.	Shares, \$25.00 Each.
THE GLOBE COMPANY.		
No. 1000.	[SEAL.]	
[STATE ARMS.]	FULLY PAID UP AND FOREVER UNASSESSABLE.	
.....Shares.	Boston, Mass.,	.....188 .
<i>This is to Certify that.....entitled to</i>		
.....Shares of the Capital Stock of		
THE GLOBE COMPANY,		
<i>fully paid up by and issued in payment for property deemed essential to the prosecution of the business of the Company, as per Certificate filed in the office of the Secretary of State for Connecticut, transferable only on the Books of the Company, either in person or by Attorney, on the return of this Certificate.</i>		
<p>THIS IS PREFERRED STOCK, And is limited to \$250,000 on each million of capital, and shall receive a dividend of ten per cent annually out of the net earnings of the corporation, and then</p>		<p>THIS PREFERRED STOCK Shall share in any further dividends after the common stock has received a dividend of ten per cent annually, both kinds equally.</p>
<i>In Testimony Whereof the said Company has hereunto affixed its seal and caused this Certificate to be signed by its President, Secretary and Treasurer.</i>		
.....Secretary.	.....Treasurer.	.....President.

GEORGE E. DUTTON, Treasurer. ALLEN B. CURRIER, Secretary. JOSEPH KELLY, President.

CHARTER OF THE GLOBE COMPANY.

ARTICLE 1.—The name of said Corporation shall be THE GLOBE COMPANY.

ARTICLE 2.—The capital stock of said Company shall be one million dollars (\$1,000,000), and the capital stock shall be divided into ten thousand shares, of one hundred dollars each.

ARTICLE 3.—The purposes for which said Corporation is formed are the following:

- A. To buy any letters patent in this or any country, to re-issue and extend the same when necessary.
- B. To manufacture goods or articles of any kind, patented or not.
- C. Furnish capital to manufacture any patent goods.
- D. To license any person or persons, corporation or corporations, to use any patents owned by the Company.
- E. To use all lawful means to extend, sustain, defend and strengthen patents owned by the Company.

F. To buy, sell, own and deal in real or personal property for the prosecution of said business, and generally to do all things incidental to said business, and to the management thereof.

G. Patents once owned or controlled by the Company shall not be sold or assigned, except by two-thirds vote of all the stock.

ARTICLE 4.—The amount of the capital stock actually paid in is one million dollars, and is based upon and fully paid by certain valuable rights secured by assignment to the Company, and in payment for which said stock is issued.

ARTICLE 5.—One-tenth of the whole capital stock shall be reserved to be sold for capital, or to be used for the best interest of the Company whenever a majority of the board of directors may deem it expedient to dispose of any part of the same.

ARTICLE 6.—No debts shall be contracted for more than there is actual money in the Treasurer's hands to pay for the same.

AMENDED NOV. 4, 1880, by making the Stock into 40,000 Shares, and the par value \$25. each Share.

A SPECIAL MEETING OF THE STOCKHOLDERS

of the Globe Company (which owns Berney's spark, smoke, gas and steam consumer) was held at 131 Devonshire street last week. There was a full attendance, President Kelley in the chair. A report was made of the progress of the company, which was satisfactory to all present. The new patents, further perfecting the invention, were shown, and numerous contracts with railroads who have adopted the invention and are now using it were exhibited. Letters from master mechanics of railroads, showing that the invention was exactly what was needed, were read, and demonstrated that the claims of the company, that this invention consumes the sparks and smoke, and saves a great deal of fuel, paying its cost over several times in a year to any railroad company using it, were sound. Some of the stockholders, who were exceedingly gratified with the regular quarterly dividends of 2½ per cent. which are now being paid, investigated that question thoroughly, and found that the company had contracts to warrant still bigger dividends. A proposition to make the par value of the stock \$25 a share, keeping the same relative capital, was proposed and unanimously adopted. The stockholders were not only pleased with the condition of the company, but so well satisfied that some of them subscribed for additional stock and are sending in their friends to secure a block. The closer this stock is investigated the more clearly does it show that it is a sound investment and one which is on a sure dividend-paying basis.—Boston Herald and Globe, Nov. 8th, 1880.

GREAT INVENTIONS PAY.

From Editorial of The Boston Herald, October 19, 1880.

"SIR HENRY BESSEMER, the inventor (who received his knighthood for his invention), has been presented with the freedom of the city of London. Sir Henry converted cast-iron into steel in twenty minutes, reduced the price from \$300 to \$35 a ton, and increased the production from 51,000 to 1,000,000 tons a year, saving in the life of one set of steel rails more than \$850,000,000 for Great Britain alone, besides the increased safety and comfort to the passengers. *And yet this change was not an easy one to bring about.* Mr. Bessemer (as he was in those days), *tried for a long time to get steel makers to use his method, and could not make them believe it was for their advantage to go to a trifling expense to make steel as he proposed. Failing in this, very much against his inclination he formed a company to manufacture Bessemer steel. The success of this enterprise was phenomenal. Its profits, as might be supposed, were prodigious, and after a time the works, (or stock) were sold at TWENTY-FOUR TIMES AS MUCH MONEY AS THEY ORIGINALLY COST.*"

The above is but a small portion of the editorial.

But few men have made money more surely and rapidly, than stockholders in companies that control valuable patents.

THE AMERICAN SCREW COMPANY OF PROVIDENCE, R. I.—Some years ago, a patent was granted for making a gimblet screw point to a common screw. That stock was sold at \$25 a share, and even less, and went up to \$8,000 a share. A grocer took some shares from his debtors, who had it, threw them on his wife's lap, saying, "Here Mary, I will give you this stuff." In three years reverses came, and for over thirty years his family have been supported in luxury, and are now millionaires, all from that stock in the American Screw Company.

Shares in the **UNION CHEMICAL WORKS**, of Jersey, went up in nine months to \$16,250 a share, and sold for cash, and was held at that price 15 years, paying dividends on that valuation. Letters patent was the property that was bought at those enormous figures in 1862.

THE AMERICAN TURPENTINE COMPANY of New York, owned Letters Patent for distilling Turpentine out of stumps. This patent was bought in 1863, for \$50,000, for cash; and it was known that the patent would be good for nothing after the war ended, yet the stock of the company was \$5,000,000, and sold at \$100 a share—\$300,000 being sold in one day.

BELL TELEPHONE STOCK sold at \$17½ a share, went up to \$1100 recently, and its capital stock increased by a special act of the Legislature of Massachusetts to \$10,000,000. Of course the holders of the original stock receive the benefit of all extra dividends of stock.

WESTERN UNION TELEGRAPH COMPANY.—This stock has been multiplied, at least four times, without a cent of cost to the holders, and to-day pays eight per cent. annually to its stockholders, being 32 per cent. interest.

Will **THE GLOBE COMPANY'S** inventions pay that saves over one-third of the fuel, prevents smoke, gases and sparks annoying passengers and the public. A few months ago it was introduced to the public in its crude state; the Directors and Stockholders held their meetings in each others dwellings, the invention unknown.

To-day, three elegant offices, in one of the finest buildings in Boston, accommodate its Officers and Stockholders. Three large shops, filled with tools and materials, supply its many engineers, who are now putting the inventions on.

Orders flow in faster than they can be filled, and branch offices and depots for supplies will be soon established in Chicago and Atlanta, the Western and Southern railroad centres; and in less than four months, one will be fixed at Montreal, Canada, and as soon as possible in the European capitals.

The question is, will it pay to invest a few dollars in a ten per cent. stock, to enable the Company to do their business on a grand scale, so that the stock will pay as well as Bessemer, or better than any other stocks that have enriched their holders. It is but once in a lifetime that such an opportunity occurs. Don't neglect it.

At least \$10,000,000,000 (ten thousand millions of dollars) are to-day invested that does not pay over 4 per cent. interest. We pay 10. It will take 25 years to double capital at 4 per cent., and 10 years at 10 per cent.

But this stock will, we feel assured, pay from 10 to 50 per cent. annually.

The monopoly of the whole world in these great inventions, on a \$1,000,000 capital, speaks for itself.

And the certificate will be returned by registered letter the same day that the order is received. Send full name and Post-office address.

In conclusion, let us here state that there does not exist on the face of this Globe any Company that can pay as much interest for the money invested, or that will be such a blessing to all the people, as this will, to insure a prompt paying dividend to all who purchase the Preferred Stock. *The Board of Directors have unanimously voted, That the Preferred Stock should be limited to one-quarter of the Capital Stock; that it should receive 10 per cent. annually, in quarterly dividends of 2½ per cent., out of the actual earnings of the Company; that the contracts made, and being under negotiation, will alone pay this dividend for years and years to come.*

This is no fancy Stock—it is founded, as its Charter is, to last for years to come—wisdom, prudence, integrity, justice, watchfulness and economy, govern its direction.

No one need fear to invest in its Stock. Many families, whose members are Stockholders and Directors, have every dollar in the Company; widows and orphans' trust funds are freely paid for its Stock.

SPECIMENS OF STOCK mailed to any address, on receipt of stamp.

Send Postal Orders, Checks or Drafts on Boston, for one or more shares, at \$25.00 each.

ALLEN B. CURRIER, Treasurer,

131 Devonshire Street, Boston, Mass.

Mr. Berney for six long years endeavored to get his inventions tested; but it was only when he formed a stock company that he succeeded, and we believe that this company's stock will be worth as much as the **BESSEMER COMPANY'S**. The use of coal is hourly, it is incessant, and as our patents will cover **THE WHOLE GLOBE**, WHY SHOULD IT NOT PAY PRODIGIOUS DIVIDENDS? In two months of active business it earned enough to pay at the rate of a 10 per cent dividend, and can now pay more than that on its preferred stock.

The Berney inventions will reduce the cost of using coal one-third, as there are 30,000 locomotives using, on an average, two tons of coal or wood a day, which we will place at \$3.00 a ton, there would be an annual saving of \$18,000,000 in the United States alone; this is but a trifle compared with the benefits and comforts of freedom from sparks and smoke, and the millions lost by damages from sparks and smoke in every way.

GOODYEAR immortalized himself by vulcanizing Rubber, and left his family very wealthy, giving employment to many thousands in the numerous stock companies.

HOWE, with his Sewing Machine, reduced the hard labor of women, gave employment to tens of thousands, and died a millionaire.

SINGER, whose monuments are the production of his brain, that is to be found in three millions of homes all over the world, died, leaving \$15,000,000, and one of the most powerful stock companies in existence.

CYRUS MCCORMICK, with his Reaper, harvested millions of money, and made it possible to gather in the great crops of the West, to feed the toiling millions of America and Europe.

RICHARD HOE invented and made Printing Presses, that excel all others—their ever-revolving cylinders are to be found in every city and town, and by their rapidity, spread forth news, intelligence, educating the people. Col. Hoe left millions of wealth, and a stock company in New York city.

HENRY DISTON, of Philadelphia, began to make a few Saws by hand. His enormous manufactory, the largest of its kind in the world, attests the value of his many inventions.

CORLISS, of Providence, R. I., devoted his time to the improvement of the Steam Engine. His fame as an inventor, and the liberal reward he has received, attest the value of his efforts.

THOMAS KINGSFORD, a poor man, as nearly all inventors are, for the maxim holds, true necessity is the mother of invention, invented the machinery to extract Starch from corn. The immense works owned by the Kingsford (stock) Company at Oswego, N. Y., and its prosperity, shows how inventions pay.

R. P. PARROT, inventor of his plan of shrinking on wrought iron bands on cast-iron cannon, made an immense fortune from successful inventions, and left his immense works at Cold Spring, N. Y., as an evidence of the value of brains and talent put into inventions.

ALBERT WEBER, inventor of his improvements in Pianos, by skill, industry and business tact, left his family millionaires, and his name and fame an honor to America, his splendid instruments to charm and electricity all who hear them. Steinway, Chickering, Bradbury, and others, have their names enrolled as inventors.

GARDNER CHILSON improved Stoves to almost absolute perfection, and left a million of money.

PULLMAN AND WAGNER—Reader, have you ever rode 2,000 miles in a very common lot of cars, night and day, to see some poor mortal, ere his spirit passed away, or on some errand that could not be delayed? I have, tired and sore have I been at the end of the journey; but thanks to Pullman, Wagner, and others, we can sleep and eat and ride in luxury now. A \$12,000,000 Stock Company rewards Pullman for his toil.

COL. E. MILLER, inventor of the Miller Platform Coupler and Buffer, has, through his great invention, saved, and will save more lives and suffering, than any man on earth, and we know what we say. **GOD BLESS HIM**,—a good, kind, generous man, with a soul in him.

WESTINGHOUSE, with his Air Brakes, shares with Miller and Pullman, in the honor of making railroad travel safe and comfortable, and we are happy to say, that the great company that bears his name, pays solid dividends.

But we must stop, for we could fill a book as large as the Bible with well-merited notices of thousands of inventors, who have done more to benefit and civilize mankind, than all other classes of men.

TO RAILROAD COMPANIES.

THE GLOBE COMPANY on this page illustrates the outward appearance of three of their stacks, the fourth being shown on the engraving of the locomotive on page 3. As is here illustrated in the Straight, the Globe and the Diamond; *all these are made of cast-iron, in the best manner, by the POCASSETT IRON WORKS—Henry S. Sterling, Esq., President, Cliff Street, New York—by special contract for this Company; of fine metal and superior to any other foundry.*

COAL OR WOOD-BURNING STACKS MADE OF STEEL OR IRON.

During the last six months our stacks have been placed on many locomotives on the Old Colony, Central Vermont, Sussex, New York & New England, Cumberland & Pennsylvania, Western and other railroads.

TO CONSUME SPARKS.

COL. BERNEY has perfected and been allowed nearly twenty patents for his wonderful improvements in locomotive and other boilers and furnaces. The result is, that with the neat stacks herein illustrated every particle of smoke is prevented, when fired as directed.

And THE GLOBE COMPANY herein pledges itself to contract with any Railroad Company, that it will so change their locomotives that they shall.

1. MAKE PLENTY OF STEAM.
2. RUN ENTIRELY FREE OF SPARKS.
3. NO SMOKE TO ISSUE FROM THE STACK.
4. TO PREVENT ALL FIRES FROM STACKS.
5. TO SAVE ONE-THIRD OF THE FUEL.

6. AND FOR ALL THIS, INCLUDING ROYALTY, *they will take the price of fuel saved in one year where coal is \$3.00, or over, a ton, or \$500, cash, for each locomotive fitted up with THE SPARK CONSUMER AND SMOKE PREVENTER.*

We can send plain Spark-Consuming Stacks, same style, or Spark and Smoke-preventing Stacks and appliances.

THESE STACKS WILL LAST TWENTY YEARS' ORDINARY USAGE.

For Wood-Burning Locomotives

we can use the old style SPARK CHAMBER STACKS, by fitting on our pipes; but we recommend, on the score of economy, our regular Diamond or Globe Stack, to burn or prevent smoke; they will pay, even where wood only costs a dollar a cord. Passengers do not like the smell of smoke from wood any more than of coal, and in these days of refinement it is time to prevent all annoyances that can be done.

It will pay, be sure of that; thousands and tens of thousands will not travel for pleasure, because there is no pleasure in closed cars, kept so to prevent sparks and smoke out of them. We would call the attention of railroad owners to these facts; for they are facts; and the public will appreciate any efforts made for their comfort.

Send height of Stacks desired, from top of smoke-box or arch; size of cylinders; diameter of smoke-arch; whether for coal or wood; for Spark Consumer, or Spark Consumer and Smoke Preventer combined; style of Stack—Diamond, Globe, or Straight—cast-iron, steel; or wrought-iron.

These Stacks will be sold all fitted up, so that all that has to be done is to fit on the saddle, adjust the Spark Chambers and insert the return flues.

We refer to the following gentlemen, who have Stacks in use on the railroads named below:

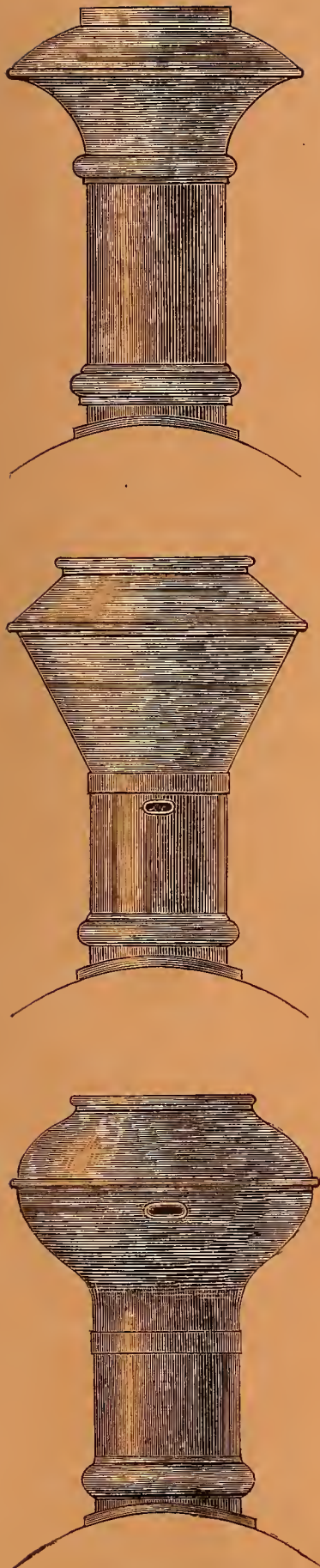
- J. R. KENDRICK, Supt. J. K. TAYLOR, M. M., Old Colony R. R., Boston.
 J. ADAMS, Supt. GEO. A. COOLIDGE, Supt. of M. P., Fitchburg R. R., Boston.
 JOS. H. WILSON, General Manager. GEO. E. BOYNTON, Supt. of M. P., New York & New England R. R., Boston.
 E. B. CASE, Supt. E. H. OSBORN, M. M., Sussex R. R., Newton, N. J.
 THEO. HOUSTON, Supt. EDWARD MINSHALL, New York, Ontario and Western Railway, Middletown, N. Y.
 O. L. BURWELL, Supt. N. W. HOWSON, M. M., Mount Savage, Md.
 J. M. FOSS, Asst. Gen. Supt. J. M. FOSS, Supt. of M. P., St. Albans, Vt.
 S. A. WEBBER, Supt. GEO. W. REYNOLDS, B. C. F. & N. B., Taunton, Mass.
 TIMOTHY CASE, General Manager. EDWARD OSBORNE, M. of M., Green Bay, Wis.

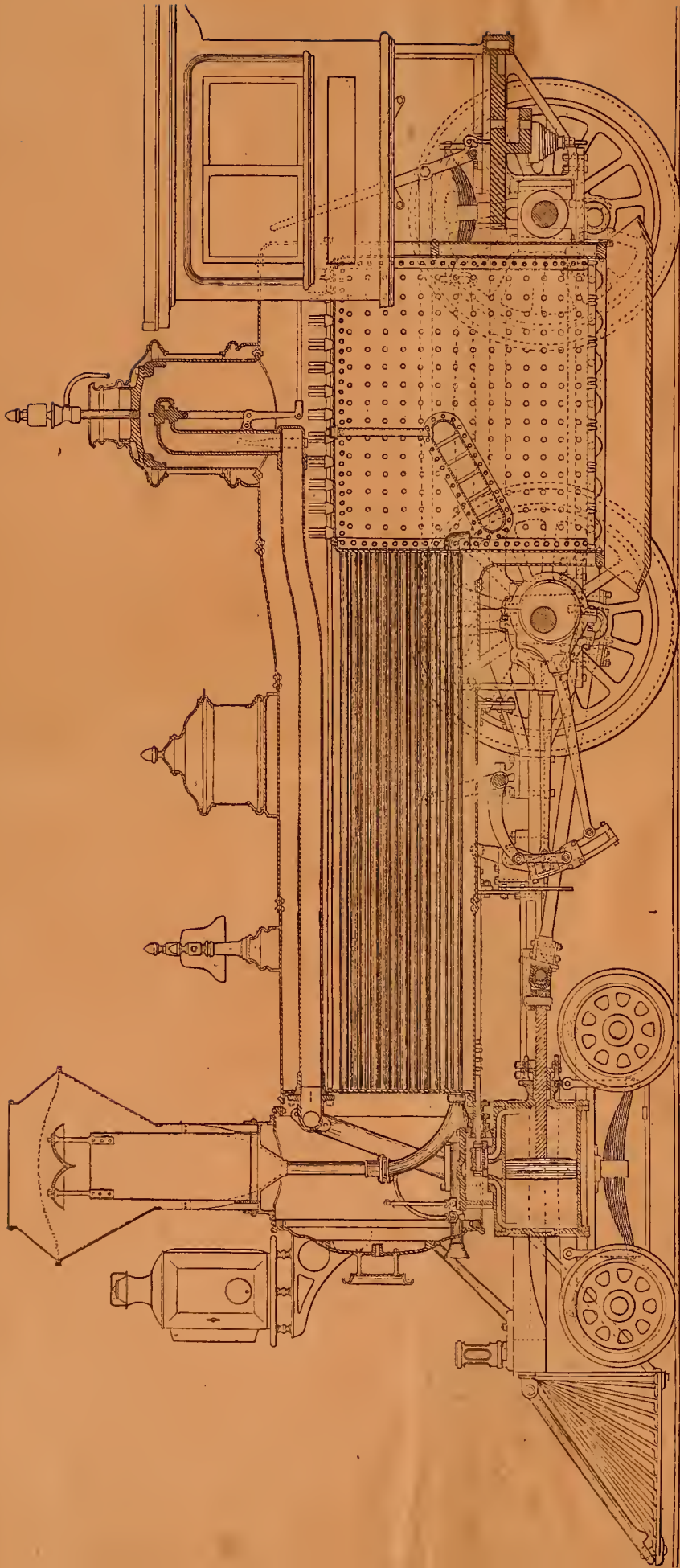
We have orders for the Stacks from railroads in nearly every State in the Union, and cannot get them ready fast enough to supply the orders. It is estimated that it will take acres of shop-room to furnish all that will come from the United States, Canada and Europe.

Drawings sent with instructions. Address,

THE GLOBE COMPANY,

131 Devonshire Street, Boston, Mass.





THE ENGRAVING OF A LOCOMOTIVE

herein shown is a complete copy of a working drawing, by which four were built for the Old Colony Railroad Company, of Boston,—Cylinders 18x24; Drivers 5 feet in diameter,—by James K. Taylor, Esq., M. M.

The Scale of this Drawing is 5-16 of an inch to a foot.

These powerful engines are fitted up with the Berney Spark Consumer, as it was put on them during the year 1880. Simple as it was, it has been made much more so; in fact, entirely changed in its construction and operation, rendering it more complete, and operating even better than the 1880 Stack. The fact that four locomotives can run as clean and economical as stated by the engineers and firemen of the Old Colony R. R. Co., who are hauling, every day, as

Large Passenger and Freight Trains

as any railroad in the United States. With them proof is not to be disputed, *because they are facts*, and the same can be demonstrated every hour in the day on more than twenty locomotives on the Old Colony R. R., and on eight other railroads,

A MASTER MECHANIC

stated to several other gentlemen, "Mark my words: This Spark Consumer will go into general use; it is not perfect now, but even as it is, no railroad can afford to do without it." The Miller Platform, Compler and Buffer struggled along for years before it was put on 600 railroads. Now we have a

PERFECT SPARK CONSUMER AND SMOKE PREVENTER,

without trumpets or cold air, for which we have, and are allowed, a large number of patents. *We only ask an honest investigation of the merits of our Stacks. Not a Company that has given it a trial has rejected it. It is no hideous contrivance.* It is not encumbered with Spark receivers. It is but a plain, sensible plan, to return red-hot coals to the fire-box, with hot air, that unites with the gases and prevents Smoke.

The wire mesh at the top of the Stack is relieved of the mass of Sparks, which are precipitated down into the chamber by the cone, and the area is allowed for the escape of the steam.

A Fair Trial will convince anyone of its Economy and Usefulness.



4

ILLUSTRATED
CATALOGUE

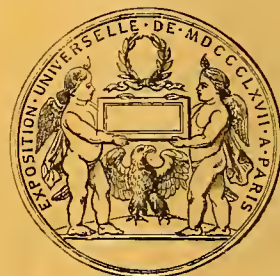
OF THE

MASON & HAMBLIN

4

ORGAN

Co.



WAREROOMS:

BOSTON: 154 Tremont St.; NEW YORK: 25 Union Square;
CHICAGO: 80 & 82 Adams St.; LONDON: METZLER &
Co.: 37 Gt. Marlborough St.; VIENNA: BERN-
HARD KOHN, 20 Bœcker Strasse.

JOHN MOONEY & CO., PRINTERS, N. Y.



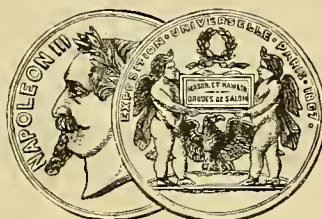


TWO HIGHEST MEDALS AND DIPLOMA OF HONOR



AT VIENNA, 1873

FIRST MEDAL



AT PARIS, 1867,

HIGHEST AWARDS IN AMERICA ALWAYS!

THE MASON & HAMLIN CABINET ORGANS

Are of such universal reputation, not only throughout America, but also in Europe, and are so generally recognized as the STANDARD OF EXCELLENCE among instruments of the class, that few will need any further assurance of their superiority. They have ALWAYS been awarded GOLD or SILVER MEDALS, or other highest recompense, at INDUSTRIAL EXPOSITIONS, IN AMERICA AND EUROPE. At the great VIENNA EXPOSITION, 1873, the most extensive and competent comparison ever made, this Company received the FIRST MEDAL over all competitors, by the concurrence of all the juries, being the only American manufacturers of this class whose instruments were found worthy of any award. At the PARIS EXPOSITION, 1867, they also received the FIRST MEDAL. They have thus always received Highest Medals in competition with European instruments, and they are the only American Organs which have obtained any, even an inferior award, in such competition.

For improvement of this instrument, as shown at the Vienna Exposition, the AUSTRIAN INDUSTRIAL SOCIETY awarded to Mr. EMMONS HAMLIN, of this Company, its GRAND SILVER MEDAL AND DIPLOMA OF HONOR—a distinction won by but five Americans in all. For their improvements, and the demonstrated superiority of their work, they have also repeatedly received GOLD OR SILVER MEDALS, or other Highest Awards from the MASSACHUSETTS CHARITABLE MECHANICS' ASSOCIATION, Boston; FRANKLIN INSTITUTE, Philadelphia; AMERICAN INSTITUTE, New York; MARYLAND INSTITUTE, Baltimore; MECHANICS' INSTITUTE, Cincinnati; UNITED STATES FAIR, Chicago; MECHANICS' FAIR, San Francisco; and at the STATE FAIRS of New York, Pennsylvania, Ohio, Indiana, Iowa, Vermont, Kansas, Rhode Island, Illinois, Georgia, and every other State where Fairs are held.

Mason & Hamlin Organ Co.,

154 Tremont Street, Boston.

25 Union Square, New York.

80 & 82 Adams Street, bet. State and Dearborn, Chicago.

Metzler & Co., 37 Great Marlborough St., London. | Bernhard Kohn, 20 Bæcker Strasse, Vienna.

A MAJORITY
OF
THE MOST EMINENT MUSICIANS IN AMERICA.
WITH MANY IN EUROPE,
HAVE GIVEN WRITTEN OPINIONS
THAT THE
MASON & HAMLIN CABINET ORGANS
ARE
UNEQUALLED BY ANY OTHERS.

Specimens of such opinions, from many noted names, will be found scattered throughout these pages, and the

TESTIMONY OF ONE THOUSAND

Is published in another pamphlet termed a TESTIMONIAL CIRCULAR, which will be SENT FREE TO ANY ONE DESIRING IT.

The testimony to the superiority of these Organs is

ENTIRELY UNPRECEDENTED

BY THAT EVER GIVEN TO ANY OTHER INSTRUMENTS WHATEVER,

Both as respects the

EMINENCE AND NUMBER OF THOSE WHO TESTIFY

And the

EMPHATIC CHARACTER OF THEIR TESTIMONY.

(See testimony in full in TESTIMONIAL CIRCULAR.)

WARRANT.

Every Organ made by us is warranted to be made in the most skilful and thorough manner, of the best and most perfectly prepared material, and to be, according to its size, capacity, style, and class, the best Instrument which it is practicable, in the present state of the art, to construct.

MASON & HAMLIN ORGAN CO.

MASON & HAMLIN CABINET ORGANS.

So great have been the improvements effected within a few years, in Cabinet Organs, that they have become the most popular of large musical instruments. It is estimated that over thirty thousand of them are sold, annually, in the United States alone. They are adapted to all classes of music, sacred as well as secular; are pleasing alike to those who have most musical cultivation, and those who have least. They vary so widely in appearance, capacity, and cost, that they are adapted to the greatest variety of tastes, uses, and pecuniary means. They have come to be regarded as almost a necessity in churches and Sunday-schools, adding so greatly to the attraction and interest of the services that it would be difficult to find any who, having used one, could be induced to dispense with it. The best musical artists and amateurs regard them as essential for the adequate rendering of chamber and classical music, and at the

Italian Opera they are constantly employed. But they are especially a POPULAR INSTRUMENT, filling what has heretofore been a vacant place in the households of the people at large, from those of the rich, who can indulge in expensive tastes, to those of very moderate means, where economy must be carefully consulted.

The Mason & Hamlin Cabinet Organs are especially durable and not liable to get out of order, will stand the most trying climates, and can be sent any where, ready for use, by ordinary freight routes, without risk. They scarcely ever require tuning; not once where a piano does twenty times. They are easily played upon, so that one with the least musical knowledge or taste will at once derive pleasure from their use. They are elegant as furniture, and in one or other of the great variety of styles will form a chief ornament for any position.

UNEQUALLED IN EXCELLENCE.

The Mason & Hamlin Organs embody the latest and best results of inventive genius and experience in this department, embracing, it is confidently believed, EVERY REALLY VALUABLE IMPROVEMENT yet effected in instruments of the class in this or other countries, and including several of importance which, being patented, are used ONLY in these Organs. They are also the product of peculiar skill and UNEQUALLED FACILITIES FOR MANUFACTURE.

Their superiority is proved by the uniform result of comparisons at Industrial Exhibitions; by the unequivocal testimony of musicians generally, American and European; by extensive demand for them from Europe, notwithstanding the higher prices which must necessarily be obtained for articles manufactured in America; and by the growth of a business which has increased from a small beginning to be the largest of its class in the world. The mass of testimony

which can thus be presented is irresistible; yet the chief reliance of this company is on the intrinsic superiority of their work, which they are sure is greater to-day than it has ever been before, and which must be evident to every competent judge who thoroughly examines and compares. Musicians will find that, in quality and quantity of tone in proportion, variety, convenience for use, and all other excellences, these Organs possess, in an even higher degree than ever before, these merits, which have won for them their pre-eminent reputation. Mechanics will perceive that every instrument, and every part of every one, interior as well as exterior, is made in the most thorough and workmanlike manner, of the best material. Attention is asked to the detailed "RESPECTS IN WHICH MASON & HAMLIN ORGANS EXCEL," on page 4.

CHEAPEST AS WELL AS BEST.

The Mason & Hamlin Organ Co. are enabled to furnish Organs at prices which make them cheapest as well as best, by UNEQUALLED FACILITIES for manufacture; these facilities arising largely out of occasion to manufacture extensively. The demand for the work of this Company is VERY MUCH greater than that for any other instruments of the class in the world. Occasion to manufacture so largely has enabled them to use an amount of ingenious machinery and a division of labor which could not be profitably employed in a business of less extent. By these means not only greater

perfection of workmanship is secured, but also better economy of production. In pursuit of their policy to sell cheapest, they uniformly add to cost of production the least remunerative per cent. profit, and so obtain the fixed selling price, which is printed in their price-lists. They know, therefore, that they are selling as low as can be afforded by the manufacturer having the greatest facilities, and *lower than could be afforded for any other, for instruments so well made, from such material.*

WHERE AND HOW TO PURCHASE.

Any one desiring one of our Organs is advised, if not near to either of our warerooms, to purchase it of an agent, if there is one in his vicinity, as by so doing he will save freight. He should be careful to get a fresh instrument with latest improvements. But when there is no agent convenient, a draft for the price may be enclosed directly to us, with description of the Organ wanted, and especially the *number* designating the style, with directions how to ship. They are so packed that they can be safely sent any where by ordinary freight routes. No charge is made for packing and shipping. When an instrument is thus ordered of us, we take pains

to select the best of the style we have on hand, and *warrant it to give satisfaction to the purchaser.* We usually have on hand instruments made by other makers, which have been taken in part exchange, and can be sold at low prices. Persons having instruments which they desire to exchange should write full descriptions, with name of maker, and length of time the instrument has been in use, and its condition. In many cases we can, from such information, determine its value. Address THE MASON & HAMLIN ORGAN CO., 154 Tremont Street, Boston; or 25 Union Square, New York; or 80 and 82 Adams Street, Chicago.

DESCRIPTIONS OF STYLES.

For prices, see Price-List on separate sheet of colored paper.

THE MASON & HAMLIN ORGAN CO. make FIRST-CLASS WORK ONLY, and would esteem it a calamity to have an inferior Organ leave their factory. Very great variety is offered in size, capacity, style of case, elegance of finish, and ornamentation; but throughout the whole will be found the same careful selection and preparation of material, and conscientious workmanship.

The interior is always of the same, and the very best quality. The Mason & Hamlin *Patented Reed Valves, Sounding, and Tube Boards, Bellows, &c.*, are used in all styles. Other Mason & Hamlin patented improvements, as *Resonant Cases, Automatic Swell, Improved Vox Humana, Octave Coupler, Euphone, Transposing Key-Board, Revolving Fall-Board, &c.*, are in particular styles, as designated.

The cases are of *Solid Black Walnut*, except where otherwise stated, the carpets on the pedals are of superb quality and beautiful patterns, made expressly for these Organs; and every part of the work will be found tasteful in design and masterly in execution.

EXTRA STYLES.—In this Catalogue only such styles are enumerated and described as we are constantly making in large quantities. In addition to these, we are frequently finishing, and offer at our warerooms, various styles in elegant cases up to \$1,000 or \$1,500 each. In their musical capacity these rarely differ from the styles described; but the cases are so constantly varying in fashion, style, design and finish, that it is impracticable to describe them in a catalogue.

ORGANS RENTED WITH PRIVILEGE OF PURCHASE.—We now rent our Organs to parts of the country readily accessible from our warerooms or agencies, on very favorable terms, which are contained in a separate circular, **TERMS OF RENTING, WITH PRIVILEGE OF PURCHASE**, which will be sent free to any one desiring it.

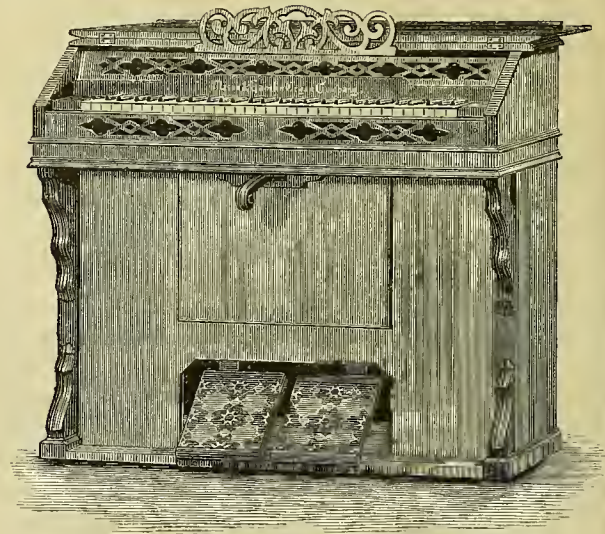
(For FOUR OCTAVE and SINGLE REED Organs, see page 15.)

Style P.—FIVE OCTAVE, DOUBLE REED, WITH KNEE STOP. With two sets of Vibrators throughout; one of four feet pitch; one of eight feet. **Automatic Swell, Self-Adjusting Reed Valves, Improved Bellows, Reed Boards, Reeds, etc.** CASE OF SOLID BLACK WALNUT, plain.

When the Knee Stop is pressed to the *right* as far as it will go, one set of reeds is in use; when pressed to the *left*, both sets are employed. Having the **AUTOMATIC SWELL**, the loudness of the Organ depends upon the rapidity of the blowing. To produce soft tones, blow slowly; to increase, blow more rapidly.

Any gradation, from the softest whisper to the full power of the Organ, can thus be produced by the use of the **KNEE STOP** and manner of blowing, *without removing the hands from the key-board.*

The Mason & Hamlin Double Reed Organs have something like double the power, as well as brilliancy, of those of other makers. This is largely because they are so thoroughly made in every detail, and are of such strong material that no safety-valve is necessary. They use only **CENTRE-PRESSURE VALVES** and strongest reeds, made from thick metal and riveted with iron; in the bellows they use rubber cloth made from new gum, which has double the strength of that usually employed; and in all respects these Organs are made strong enough to resist the strongest pressure. Inferior Organs must be provided with safety-valves to relieve the bellows, reed valves, etc., of that pressure which they are not strong enough to bear.



Style P.

Length, 3 ft. 5 in. Height, 3 ft. 1 in. Depth, 1 ft. 10 in. Weight, 123 lbs.

RESPECTS IN WHICH THE MASON & HAMLIN ORGANS EXCEL.

Superiority of Tone.—Quality of tone is *the chief thing in a musical instrument*; the fundamental excellence; of more value than all others. An instrument which produces tones of an inferior quality **CANNOT BE GOOD**, whatever its other excellences. Though a defective quality may sometimes please at first, from its mere novelty, it will soon become offensive. Unless the tone be pure, smooth, and really good, it cannot continue to please.

It is in this very characteristic—quality of tone—that the superiority of the Mason & Hamlin Cabinet Organs is greatest, and to this excellence more than any other one, they owe their reputation. Because of its importance, it has been in this direction that the efforts for improvement have chiefly been directed. The different character and better quality of tone obtained must be obvious, on sufficient comparison, to every cultivated ear. It comes from pecu-

PRICE-LIST

OF THE

MASON & HAMLIN ORGAN CO.

JANUARY, 1874.

The following are our *lowest cash prices*, which are, therefore, invariable and subject to no discount.

It is an expedient of makers of poor organs to print enormous prices in their price-lists, in order that they may be able to take off great discounts to purchasers. Many persons thoughtlessly judge of the cheapness of an organ by the amount of discount from the maker's printed price at which it is offered them. Manufacturers understand this, and print prices which are in some cases even *two or three times* their real prices, in order that they may take off such discounts. *As a common rule, the poorer the organ the higher the price that is printed for it, and the greater the discount offered.*

The Mason & Hamlin Organ Co. have adopted and rigidly adhere to the policy of printing, at once, their lowest cash prices. This is the frank, straightforward course, and insures justice to purchasers, because it enables all to purchase at the lowest prices.

They ask that *net* prices, after offered discounts are deducted, be compared, and when this is done, and the acknowledged superiority of the Mason & Hamlin Organs is considered, are confident these will be found the cheapest instruments obtainable.

DOUBLE REED.

- Style P.—FIVE OCTAVE, DOUBLE REED, KNEE STOP, plain case.
See Catalogue, page 4...... \$110
- " R.—FIVE OCTAVE, DOUBLE REED, FIVE STOPS, Tremulant and Knee-Swell, Upright Resonant Case. *See Catalogue, page 5.*..... 125
- " T.—FIVE OCTAVE, DOUBLE REED, FIVE STOPS, Automatic Swell and Vox Humana, Upright Resonant Case. *See Catalogue, page 5.*..... 130
- " F.—FIVE OCTAVE, DOUBLE REED, FIVE STOPS, Tremulant and Knee-Swell, Upright Case. *See Catalogue, page 5.*..... 155
- " 73.—FIVE OCTAVE, DOUBLE REED, FIVE STOPS, Vox Humana, Automatic Swell, Knee-Swell, Upright Resonant Case, Revolving Fall-Board. Extra. *See Catalogue, page 6.*..... 185

SIX OCTAVE.

- " L.—SIX OCTAVE, DOUBLE REED, FIVE STOPS, Tremulant and Knee-Swell, Upright Case. *See Catalogue, page 6.*..... 180

THREE SETS REEDS.

- " M.—FIVE OCTAVE, THREE SETS REEDS, SIX STOPS, with Baritone Solo and Vox Humana, New Style Upright Case. *See Catalogue, page 5.*..... 175
- " 75.—FIVE OCTAVE, THREE SETS REEDS, SEVEN STOPS, Euphone Solo, Viol d'amour, Automatic Swell, Knee-Swell and Vox Humana, Upright Resonant Case, Revolving Fall-Board. Extra. *See Catalogue, page 8.*..... 250

WITH OCTAVE COUPLER.

- " S.—FIVE OCTAVE, THREE SETS REEDS, NINE STOPS, with Octave Coupler, Sub-Base, Full Organ, Knee Stop, Tremulant and Knee-Swell, Upright Resonant Case. *See Catalogue, page 7.*..... 190

- Style 77.—FIVE OCTAVE, FOUR SETS REEDS, ELEVEN STOPS, with Euphone Solo, Viol d'amour, Octave Coupler, Full Organ Knee Stop, Knee-Swell, Automatic Swell, Vox Humana, Sub-Base, &c. Upright Resonant Case, Revolving Fall-Board. Extra. *See Catalogue, page 8.*..... \$300
- " 28.—FIVE OCTAVE, DOUBLE REED AND SUB-BASE, SEVEN STOPS, with Pipe Organ Top. Extra. *See Catalogue, page 11.*..... 400

PEDAL BASE.

- " H.—PEDAL BASE ORGAN, FOUR SETS REEDS, SEVEN STOPS, with full pedals and Organ Seat. *See Catalogue, page 13.*..... 350
- " 10.—TWO MANUAL PEDAL BASE ORGAN, TWELVE STOPS, Full Pedals, with Organ Seat. Extra. *See Catalogue, page 13.*..... 575
- " 29.—TWO MANUAL PEDAL BASE ORGAN, with PIPE ORGAN TOP. TWELVE STOPS. With Organ Seat. Extra. *See Catalogue, page 14.*..... 750

TWO MANUALS.

- " 12.—TWO MANUALS, FOUR SETS REEDS, NINE STOPS. Extra. *See Catalogue, page 9.*..... 420
- " 32.—TWO MANUAL ORGAN, with PIPE ORGAN TOP. NINE STOPS. Extra. *See Catalogue, page 12.*..... 575
- " 46.—TWO MANUAL ORGAN, FOUR SETS REEDS, NINE STOPS, Resonant Case. Extra. *See Catalogue, page 10.*..... 475
- " 43.—TWO MANUAL ORGAN, THIRTEEN STOPS, Resonant Case. Extra. *See Catalogue, page 10.*..... 675

PORTABLES.

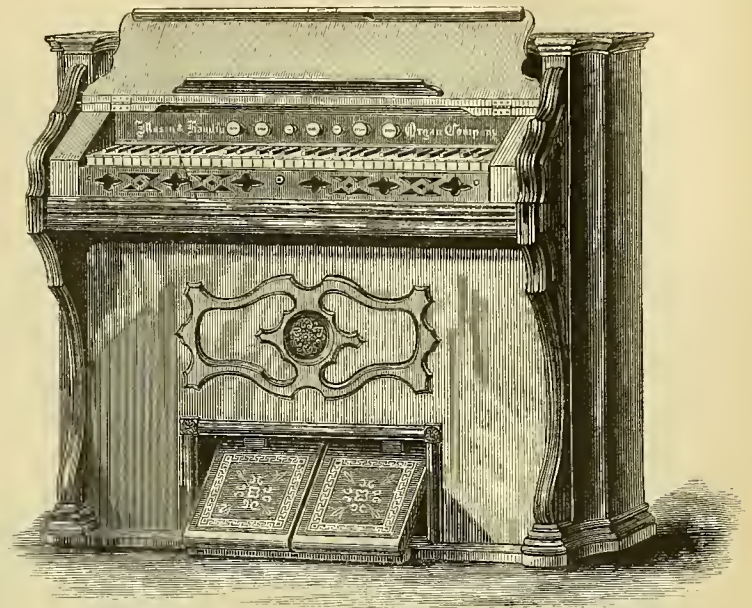
- " 1.—FOUR OCTAVE, SINGLE REED. *See Catalogue, page 15.*..... 55
- " 3.—The Same, DOUBLE REED *See Catalogue, page 15.*..... 70

ORGAN BENCHES, No. 1. *See Catalogue, page 15.* \$5.00.

See ILLUSTRATED CATALOGUE for full Descriptions and Illustrations.

Style R.—FIVE OCTAVE, DOUBLE REED, IN UPRIGHT RESONANT CASE, FIVE STOPS. (1. Viola; 2. Diapason; 3. Melodia; 4. Flute; 5. Tremulant.) With two sets of Vibrators throughout; one of four feet pitch; one of eight feet. TREMULANT AND KNEE SWELL; SELF-ADJUSTING REED VALVES, Improved Bellows, Reeds, Reed Boards, etc. UPRIGHT RESONANT CASE OF SOLID BLACK WALNUT, WITH PROJECTING KEY-BOARD AND SIDE CHAMBERS. (Exactly resembles Style T in appearance, except that it has also a Knee Swell.)

Style T.—FIVE OCTAVE, DOUBLE REED, IN UPRIGHT RESONANT CASE, FIVE STOPS. (1. Viola; 2. Diapason; 3. Melodia; 4. Flute; 5. Vox Humana.) With two sets of Vibrators throughout; one of four feet pitch; one of eight feet. AUTOMATIC SWELL, VOX HUMANA, Self Adjusting Reed Valves, Improved Bellows, Reeds, Reed Boards, etc. UPRIGHT RESONANT CASE OF SOLID BLACK WALNUT, WITH PROJECTING KEY-BOARD AND SIDE CHAMBERS.



Style T.

Length, 3 ft. 11 in. Height, 3 ft. 4 in. Depth, 1 ft. 10 in. Weight, 175 lbs.

Styles R and T are alike, except that T has the VOX HUMANA and AUTOMATIC SWELL, and R has, in place of them, the TREMULANT and KNEE SWELL. These new UPRIGHT RESONANT CASES are much admired in appearance, and add greatly to the musical excellence of the Organ.

Attention is asked to the beautiful qualities of tone, combined with great power, in all the styles in Resonant Cases.

THEODORE THOMAS, the distinguished Orchestral Conductor, who is probably as widely acquainted with musicians in this country as any one, writes: "Musicians generally regard the Mason & Hamlin Organs as unequalled by any others."

Style F.—FIVE OCTAVE, DOUBLE REED, PROJECTING KEY BOARD. FIVE STOPS. (1. Viola; 2. Diapason; 3. Melodia; 4. Flute; 5. Tremulant.) With two sets of Vibrators throughout, one of four feet pitch; one of eight feet. TREMULANT and KNEE SWELL; Self-Adjusting Reed Valves, and Improved Bellows. HEAVILY PANELED FRONT AND SIDES, WITH CARVED ORNAMENTS, CARVED ANTES,

Style M.—FIVE OCTAVE, THREE SETS REEDS. SIX STOPS. (1. Viola; 2. Diapason; 3. Melodia; 4. Flute; 5. Baritone Solo; 6. Vox Humana.) With two sets of Vibrators throughout, one of four feet pitch, and one of eight feet; two and a half octaves of Vibrators of sixteen feet pitch; KNEE-SWELL; Self-Adjusting Reed Valves; Improved Bellows. HEAVILY PANELED FRONT AND SIDES, WITH CARVED ORNAMENTS, CARVED ANTES, IVORY FRONT STOPS. Is like Style F in appearance, except that it has six stops.

Among living composers for the organ, not one is more eminent than CHARLES GOUNOD, the very distinguished composer of the opera Faust, etc. He uses the Mason & Hamlin Organs in his concerts, and in returning one which we had employed in his recent series of concerts in London, wrote thus to the London Agents:

From CHARLES GOUNOD, Author of "Faust," etc.

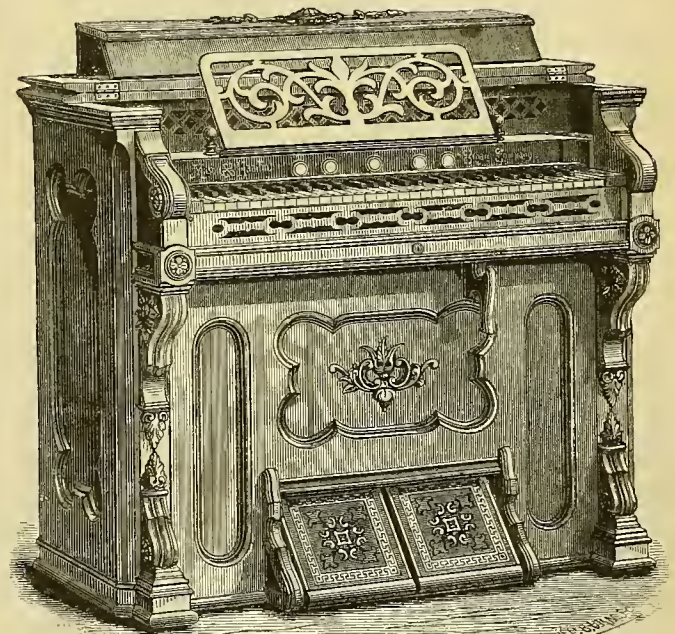
DEAR MR. METZLER:—Allow me, in thanking you for the organ which you have placed at my disposal for my series of concerts, to express my very favorable opinion on the charm of this instrument, the tones of which, both delicate and full, combine so well with the voice. I do not doubt that the Mason & Hamlin American Organ will be of excellent and valuable use in all vocal or instrumental combinations of moderate limits. Receive, my dear Mr. Metzler, all my compliments.

CH. GOUNOD.

From SAMUEL P. WARREN, Organist of Grace Church, New York.

I HAVE always taken great pleasure in testifying to the merits of Messrs. Mason & Hamlin's Cabinet Organs, which for purity and evenness of tone, as also for elegance of finish and appearance, I consider unrivaled. The recent introduction into them of the so-called Vox Humana stop, a mechanical contrivance, causing when in operation a delightful tremolando, as also a change in the quality of tone, enhances them doubly in my estimation for the still greater variety of effects that may now be produced by the player.

S. P. WARREN.



Style F.

Length, 3 ft. 9 in. Height, 3 ft. 3 in. Depth, 2 ft. Weight, 170 lbs.

liar skill in voicing, and the use of patent improvements peculiar to these instruments, and more particularly described elsewhere, as well as from the careful observance of certain intricate conditions in reference to materials and construction, which experience has shown to be essential. Mr. EMMONS HAMLIN, of the Mason & Hamlin Organ Co., was the discoverer of the art of voicing reeds, and has brought it to great perfection; and for this and other improvements was awarded by the AUSTRIAN INDUSTRIAL SOCIETY, at the VIENNA EXPOSITION, its GRAND MEDAL and DIPLOMA OF HONOR. The

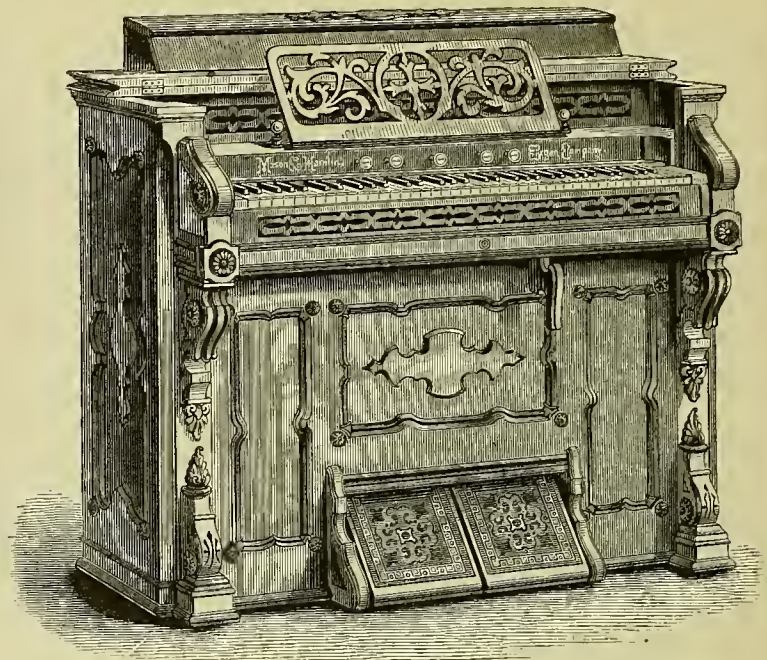
peculiar quality of tone of the Mason & Hamlin Organs is distinguishable from all other instruments of the class, from its more round, full, pipe-like quality.

Power and Volume of Tone.—The same peculiarities which give to these Organs their superior qualities of tone, aid in giving them also their fine power or volume. Purity of tone is essential to substantial power. A tone of poor quality may be heard above and distinct from accompanying voices or instruments; it may "cut through," as it is termed, and appear louder; but there is much

Style L.—SIX OCTAVE, DOUBLE REED, PROJECTING KEY BOARD. FIVE STOPS. (1. Viola; 2. Diapason; 3. Melodia; 4. Flute; 5. Tremulant.) With two sets of Vibrators throughout; one of four feet pitch; one of eight feet. TREMULANT and KNEE SWELL; Self Adjusting Reed Valves, and Improved Bellows. HEAVILY PANELED FRONT AND SIDES, WITH CARVED ORNAMENTS, CARVED ANTES, IVORY FRONTS TO STOPS.

Observe, then, that Mason & Hamlin do not content themselves with asserting roundly that their instruments are recommended as the best by the most eminent musicians; they publish the testimony itself, and it is seen that the opinion of those who are recognized as the best judges is almost unanimous. Did they not publish such testimony, it would be safe to doubt that they had it, for a manufacturer having such an indorsement of his productions is sure to print it. Let it be observed, that these are the professional musicians, the most eminent in the country, whose reputation is at stake in such a matter, and who would by no means give such emphatic evidence, unless very sure of what they affirmed. Were the testimony from one, two, or even a score only, it might be possible to doubt if they were not mistaken, or even if they had not been prejudiced by some personal considerations. But they are numbered by hundreds—are so many that it is fair to say that they include *the great body of the most eminent musicians of the country*, and their testimony is that these instruments are *clearly the best of their class.*—*New York Examiner.*

See this testimony in full in TESTIMONIAL CIRCULAR, sent free to any one desiring it.

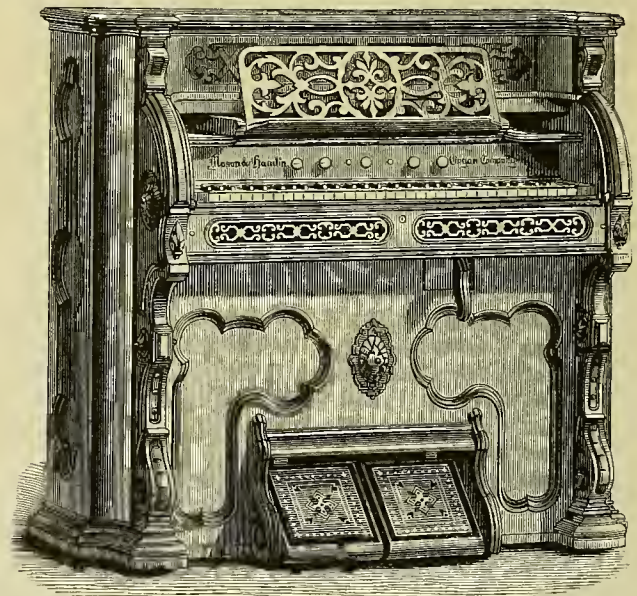


Style L.

Length, 4 ft. 4 in. Height, 3 ft. 4 in. Depth, 2 ft. 1 in. Weight, 200 lbs.

Style No. 73.—*Extra Finish.*—FIVE OCTAVE, DOUBLE REED, UPRIGHT RESONANT. FIVE STOPS. (1. Viola; 2. Diapason; 3. Melodia; 4. Flute; 5. Vox Humana.) With two sets Vibrators throughout; one of four feet pitch; one of eight feet. IMPROVED VOX HUMANA, AUTOMATIC SWELL, KNEE SWELL; Self Adjusting Reed Valves, Improved Bellows, Ivory Fronts to Keys, Clothed Mortises. New style case, UPRIGHT RESONANT, PROJECTING KEY-BOARD, REVOLVING FALL-BOARD, etc. HEAVILY PANELED FRONT AND SIDES, NEW DESIGN, CARVED ANTES.

This is one of the new styles, with the UPRIGHT RESONANT case, highly finished, having very deep and rich panels, of new designs, on front and sides; having also PROJECTING KEY-BOARD and new REVOLVING FALL-BOARD, covering the keys. This cover is raised by a single motion of one hand, and with the least possible friction or trouble, and passes entirely out of sight, except the mere edge. It has no hinges to get out of order or tarnished. When closed, no metal is shown in the Fall-Board, which tends to a rich appearance. The case is an entirely new design, very rich, and much admired. It has also both the KNEE SWELL and AUTOMATIC SWELL, either of which may be used at discretion. As shown in the cut, the KNEE SWELL is in use. If, however, this be folded back against the front of the Organ, it will be held there by a spring, and the AUTOMATIC SWELL will be brought into use.



Style No. 73.

Length, 4 ft. 1 in. Height, 3 ft. 10 in. Depth, 2 ft. Weight, 210 lbs.

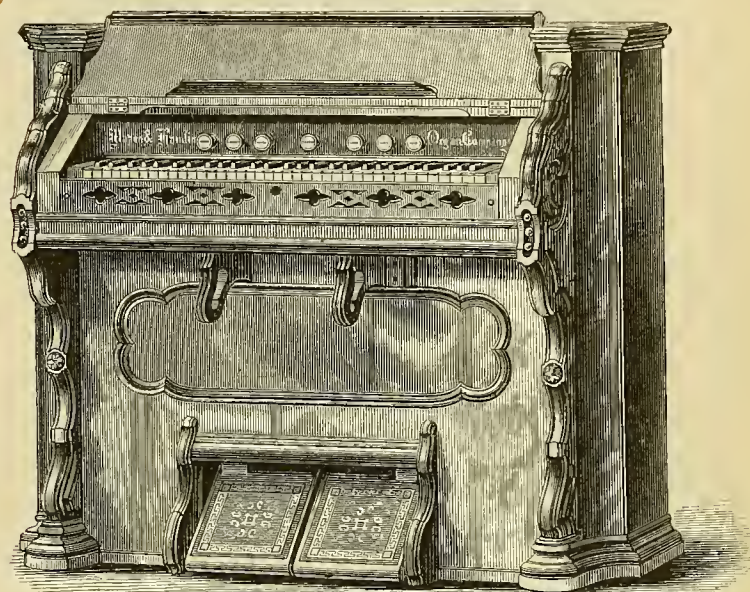
more sustaining power, and real substance and volume, in tones of the best quality, in which the vibration is perfect.

Comparison of the Mason & Hamlin Double Reed Organs with those of inferior make, which must necessarily be provided with safety-valves to prevent more than a moderate pressure on the bellows, valves, etc., will show that the former have *nearly or quite DOUBLE THE POWER of the latter.*

Capacity for Variety of Effect.—This notable characteristic

of these instruments is derived largely from their exclusive employment of several patented inventions, prominent among which are the IMPROVED VOX HUMANA, AUTOMATIC SWELL, and EUPHONE. This varying quality of tone, and capacity to imitate, with more or less success, the good qualities in the tones of a variety of instruments, including not only those of pipe organs, but also of the violin, violoncello, horn, flute, clarinet, etc., is of the highest value. Those who have not heard the Mason & Hamlin Organs having the new

Style S.—FIVE OCTAVE, THREE SETS REEDS, RESONANT CASE, with SUB-BASE and OCTAVE-COUPLER. NINE STOPS. (1. Viola; 2. Diapason; 3. Melodia; 4. Flute; 5. Manual Base; 6. Octave Coupler; 7. Tremulant; 8. Full Organ; 9. Combination Swell. *The last two are Knee Stops.*) With two sets Vibrators throughout, one of four feet pitch, one of eight feet; and one octave of SUB-BASE connected with the Manual, and OCTAVE-COUPLER, giving nearly the effect of four sets of reeds; KNEE-SWELL and TREMLANT; Self Adjusting Reed-Valves; Improved Bellows; UPRIGHT RESONANT CASE; PANELED FRONT, carved MOULDINGS and ORNAMENTS, with PROJECTING KEY BOARD AND SIDE CHAMBERS, CARVED ANTES, ETC. Coupler connects with octave below.



Style S'

Length, 4 ft. 3 in. Height, 3 ft. 7 in. Depth, 2 ft. Weight, 193 lbs.

This is a new style and must be a favorite. It combines great power with much variety, and convenience for use, at a moderate price. The FULL ORGAN stop is operated by the left knee. When pressed to the left, it brings into action all the stops in the organ except the TREMLANT and COMBINATION SWELL. When suffered to return to its ordinary position, all stops are closed, except such as are drawn in the name-board. Thus, if the performer is using one set of reeds, having perhaps DIAPASON and MELODIA drawn in the name board, he can instantly, by pressing the FULL ORGAN stop to the left with his knee, bring on the full organ, without removing his hands from the key-board. By suffering the FULL ORGAN stop to return, he has only DIAPASON and MELODIA in use. The KNEE-SWELL can as easily be opened by the right knee, so that the performer can instantly go from the softest stop, or from any stops, of the organ to its full power, or the reverse, without moving his hands from the instrument.

Having tried the Mason & Hamlin Organs, exhibited at the Universal Exposition here, I consider them the best instruments of their class that have come under my observation. The sweetness of tone and the power of tone are quite surprising, and I recommend them to all true lovers of music.—RUDOLPH WILLMERS, Court Pianist, Composer, &c., Vienna.

VOX HUMANA, combined with the AUTOMATIC SWELL, played by one who has had some experience with it, will hardly realize how much it adds to their capacity for variety, and how finely they are capable of imitating orchestral instruments.

Capacity for Expression.—Instruments of sustained notes, such as pipe and reed organs, have been accused of monotony; incapacity for light and shade producing expression. It has, therefore, been a great object with manufacturers to overcome this objection, and a variety of expedients have been resorted to. The *swell* is, of course, the chief means of producing different degrees of loudness of tone; hence much attention has been given to this, and various modes have been devised of operating it, by the feet, hands, or knees. But all have been more or less lacking in convenience or efficiency. The Mason and Hamlin Cabinet Organs employ exclusively a simple and beautiful device, known and patented as the AUTOMATIC BELLOW SWELL, which not only produces the most charming effects, but this without the requirement of extraordinary skill on the part of the performer. It should be observed that most styles are furnished also with the KNEE SWELL.

The new VOX HUMANA, used in combination with the AUTOMATIC SWELL, is also invaluable in *humanizing* the instrument; rendering it capable of much of that delicate and intense expression of emotion which is especially characteristic of a highly cultivated human voice. These two inventions complement each other; neither is complete without the other; when used together, each multiplies the value of the other.

In capacity for light, shade, and expression, these instruments are unequalled.

Quickness of Utterance.—By this is meant the instantaneousness with which a tone is produced when a key is struck. Important in all music, this is especially necessary for rendering quick, lively, music. From their excellence in this respect, these Organs have almost the vivacity and life of a fine pianoforte.

Uniformity in Character, and Equality in Loudness of Tone throughout each Stop.—Few persons are aware of the importance of this characteristic of an instrument, or give any attention to it in selecting one. Yet a composition played by the same performer on two instruments may be much more satisfactory on the one than on the other, the only difference in the instruments being that in one there is equality and uniform character of tone, while the other is defective in these respects. Every organist knows the importance of this characteristic, in which the Mason & Hamlin Organs so far excel all others.

The Quality of Keeping in Good Tune.—The practical importance of this is evident, especially when an instrument is to be in a place where a good tuner is not accessible. By thoroughness of construction, and the employment of rigid and trying tests, this merit is secured in an eminent degree.

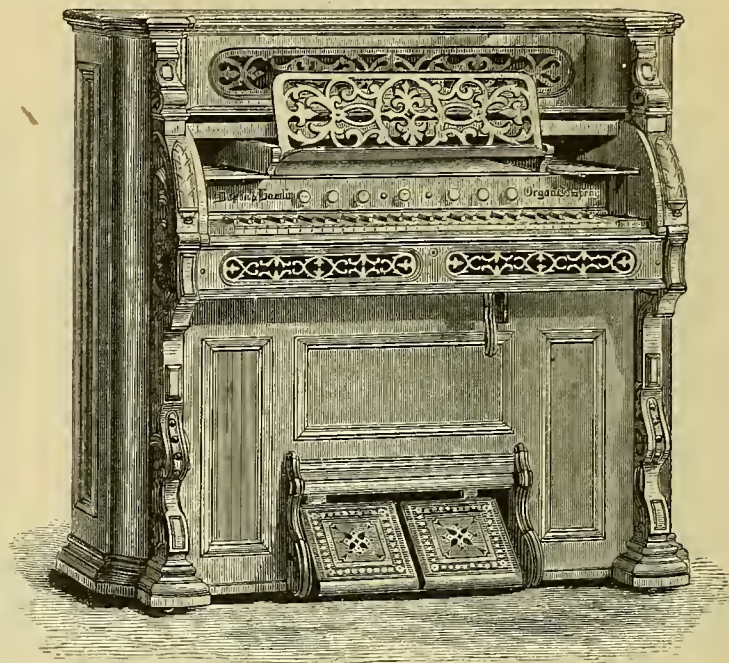
Observe what is said, further, on this matter, under the head REEDS or VIBRATORS.

Smoothness and Perfection of Action.—This, not merely when the instrument is new, but after it has been in use for years.

Style No. 75.—*Extra Finish.*—FIVE-OCTAVE, THREE SETS REEDS, UPRIGHT RESONANT, with EUPHONE and VIOL D'AMOUR. SEVEN STOPS. (1. Viola; 2. Diapason; 3. Melodia; 4. Flute; 5. Vox Humana; 6. Viol d'Amour; 7. Euphone.) Two sets Vibrators throughout; one of four feet, one of eight feet pitch; one set (two and a half octaves) sixteen feet pitch. With Automatic Swell and Knee Swell; Self-adjusting Reed Valves; Improved Bellows; Ivory Fronts to Keys; Clothed Mortises, Lamp stands, etc. NEW STYLE UPRIGHT RESONANT CASE, WITH REVOLVING FALL-BOARD, PANELED FRONT and SIDES, CARVED ANTES.

One of the much admired new styles, having the REVOLVING FALL-BOARD. The case is very elegant in design, and highly finished. The EUPHONE is known to those who are familiar with it as the richest of the reed solo stops. This style has also the VIOL D'AMOUR, a new stop, being a modification of the EUPHONE, giving the softest whispering tones, of delicious quality. It has both the AUTOMATIC SWELL and the KNEE-SWELL. If the KNEE-SWELL is folded back against the organ, it is held there by a spring, and the AUTOMATIC SWELL is brought into operation. If the KNEE-SWELL be released and brought into use, the AUTOMATIC SWELL is thrown off.

See representation of Organ with REVOLVING FALL BOARD closed, on next page.



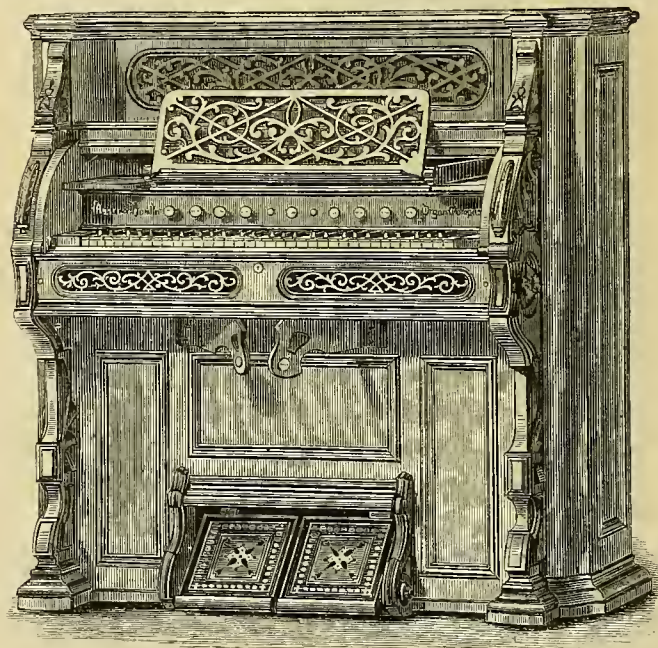
Style No. 75.

Length, 4 ft. 4 in. Height, 4 ft. 1 in. Depth, 2 ft. 2 in. Weight, 235 lbs.

Style No. 77.—*Extra Finish.*—FIVE-OCTAVE, FOUR SETS REEDS, WITH OCTAVE COUPLER and SUB-BASE, UPRIGHT RESONANT. ELEVEN STOPS. (1. Diapason; 2. Viola; 3. Melodia; 4. Flute; 5. Sub-base; 6. Vox Humana; 7. Octave Coupler. 8. Euphone; 9. Viol d'Amour; 10. Combination Swell; 11. Full Organ.) (The last two are Knee-stops.) Having two sets Vibrators throughout; one of eight feet, one of four feet pitch; one set of two and a half octaves, sixteen feet pitch, and one set of one octave of Sub-base connected with the Manual; also Octave Coupler, Automatic Swell, and Knee-Swell; Self-adjusting Reed Valves; Improved Bellows; extra Ivory and Ivory Fronts to Keys; Clothed Mortises, Lamp-Stands, etc. NEW STYLE UPRIGHT RESONANT CASE, WITH REVOLVING FALL-BOARD, PANELED FRONT AND SIDES, CARVED ANTES.

This is also one of the new styles, very highly finished. It has everything which is in Style 75, and, in addition, has the OCTAVE COUPLER, which in effect nearly doubles the sets of reeds; MANUAL SUB-BASE; and the FULL ORGAN KNEE-STOP. The latter is so placed that it can be operated by the left knee. When pressed to the left as far as it will go, every stop in the organ except the VOX HUMANA is opened. When suffered to return, as it will do by the action of a spring, all stops are closed except such as are drawn in the name-board. The organist may draw any stop or stops in the organ—the very softest, the new VIOL D'AMOUR, for instance—and then, while playing, *without removing either hand from the key-board*, can instantly, by pressing the knee-stop FULL ORGAN to the left, bring all the stops into use; by suffering the knee-stop FULL ORGAN to spring back, he as instantly and easily returns to any stop drawn in the name-board.

See representation of this Organ with REVOLVING FALL BOARD closed, on next page.



Style No. 77.

Length, 4 ft. 4 in. Height, 4 ft. 3 in. Depth, 2 ft. 3 in. Weight, 250 lbs.

It is easy to construct an instrument in such a manner that though its action is noiseless and good at first, a little wear makes it rattle and get out of order. Indeed, unless extraordinary precautions are taken to prevent it, this is usually the result in such instruments. In many styles (as described), all the mortises in the keys through which the guide-pins work, are lined with cloth, and in other respects they are so constructed that the action may be expected to be smooth and noiseless until it is worn out.

Durability, and Freedom from Liability to be Affected by trying circumstances of Climate or Position.—Here is one of the most prominent and important differences between these and other organs. Appeal is confidently made to the thousands who have been using these organs for many years for testimony to their extraordinary durability and freedom from liability to get out of order. Every precaution is taken to secure these desirable qualities in their greatest perfection. If carefully used, a Mason &

THE UNIVERSAL OPINION OF THE MUSICAL PROFESSION.—*N. Y. Tribune.*

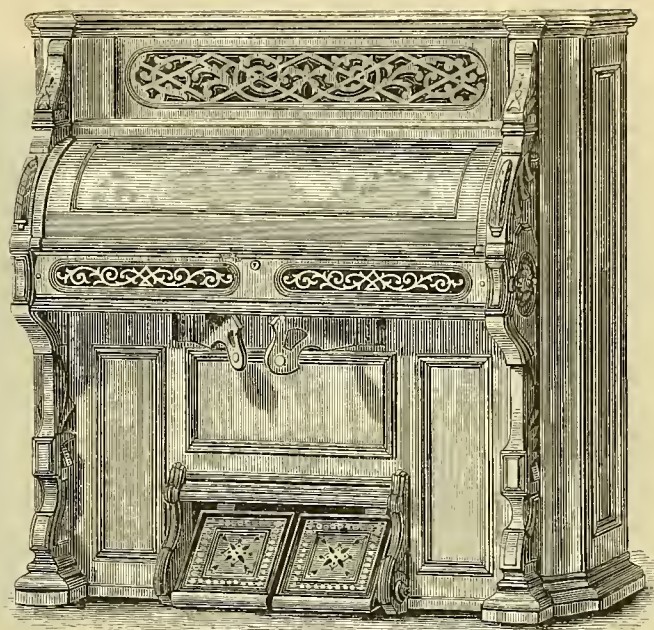
We regard the instruments of MASON & HAMLIN as the BEST OF THEIR CLASS of which we have any knowledge, and take pleasure in recommending their CABINET ORGANS especially, as very admirable, and desirable for both private and public use:

S. A. BANCROFT, Organist of Emanuel Church, Boston; LUDLOW BARKER, Organist First Baptist Church, Hartford; CHARLES BARUS, Organist of St. Patrick's Cincinnati; ADOLPH BAUMBACH, Organist, Chicago, Ill.; WM. BERGE, Organist of St. Stephen's, 28th Street, New York; MARSHALL S. P. BOND, Organist of Westminster Church, Chicago; MAX BRAUN, Organist of St. Paul's Church, Brooklyn, L. I.; HENRY CARTER, Organist of Church of the Advent, Boston; JAMES CAULFIELD, Organist, Montreal, C. E.; B. C. CROSS, Organist, Philadelphia; M. H. CROSS, Organist of Broad and Arch Street Church, Philadelphia; HENRY S. CUTLER, Musical Doc., Organist and Choir-Master of Christ Church, Fifth Avenue, New York; F. T. S. DARLEY, Organist of Calvary Church, Philadelphia; W. H. W. DARLEY, Organist of St. Luke's Church, Philadelphia; A. J. DAVIS, Organist of Dr. Chapin's Church, New York; JULIUS EICHBERG, Director of Boston Conservatory of Music; L. O. EMERSON, Author of "Harp of Judah," "Golden Wreath," etc., and Organist at Second Congregational Church, Greenfield, Mass.; THEODORE EISEL, Conductor Philharmonic Society, New York; C. EVEREST, Organist Dr. Barnes' Church, Philadelphia; H. G. EVEREST, Organist at Central Church, Philadelphia, Pa.; CHARLES FRADEL, Pianist and Composer, New York; ROBT. GOLBECK, Pianist and Composer, Chicago, Ill.; CHARLES GROBE, Composer, etc., Wilmington, Del.; R. HEROLD, Organist St. Mary's Cathedral, San Francisco, Cal.; JUNIUS W. HILL, Organist E. B. Webb's Church, Boston; WALTER R. JOHNSTON, Organist, St. Paul's M. E. Church, New York; KARL KLAUSER, Pianist, Teacher, etc.; B. J. LANG, Organist South Congregational (Rev. Dr. Hale's) Church, Handel and Haydn Society, etc., Boston; HUGO LEONARD, Pianist, Boston; MAX MARETZEK, Composer and Conductor of Italian Opera; JOHN B. MARSH, Organist of St. Peter's Church, Albany; W. P. MARSHALL, Organist Trinity Church, Pittsburgh; L. W. MASON, Teacher of Music in Public Schools, Boston; GEO. W. MORGAN, Organist of the Tabernacle, Brooklyn; DAVID PAINE, Organist First Church (Chauncey Street), Boston; JOHN K. PAINE, Organist, Boston; J. C. D. PARKER, Organist Trinity Church, Boston; HARRY SANDERSON, Pianist and Composer, New York; GUSTAVE SATTER, Pianist; LOUIS SCHMIDT, Organist of Grace Cathedral, San Francisco; GUSTAVUS SCHMITZ, Organist St. Patrick's Cathedral, New York; GUSTAVE A. SCOTT, Organist of Calvary Church, San Francisco; L. H. SOUTHARD, Organist and Composer, Boston; CHAS. STADTFELDT, Organist St. Patrick's Church, San Francisco; MAURICE STRAKOSCH, Pianist and Composer; EUGENE THAYER, Organist, Boston; H. D. THUNDER, Organist at St. Augustine's Church, Philadelphia; CHARLES WELLS, Organist, New York; CARL WOLFSOHN, Pianist, Composer, etc., New York; CARL ZERRAHN, Conductor of Philharmonic Orchestra, Handel and Haydn Society, etc., etc. Boston; and hundreds of others.

Style No. 12.—Extra Finish.—TWO MANUAL, FOUR SETS REEDS. NINE STOPS. (1. Bourdon; 2. Diapason Base; 3. Diapason Treble; 4. Hautboy; 5. Tremulant; 6. Principal Base; 7. Principal Treble; 8. Coupler; 9. Automatic Swell.) Four sets Reeds throughout, one of four feet pitch, one of eight feet to upper manual; and one of eight feet pitch, and one of sixteen feet to lower manual. Having AUTOMATIC SWELL; one Knee Swell for the upper, and one for lower manual; Self-adjusting Reed-Valves; Improved Bellows; Clothed Mortises. PANELED FRONT AND SIDES; CARVED ANTES; EXTRA IVORY, AND IVORY FRONTS TO KEYS.

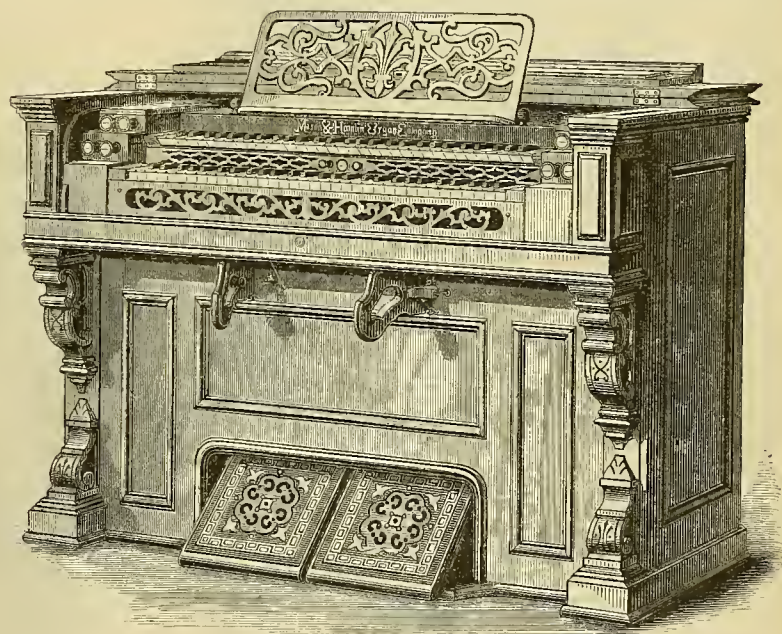
A well proportioned, fine instrument. The two manuals add greatly to its variety and convenience, and the sixteen-foot stop gives it volume and fullness of tone.

Hamlin Cabinet Organ may be expected to improve for years. They are used in many countries and most trying climates. If these organs had no present superiority, their *greater durability*



Style No. 77—Closed.

Showing appearance of REVOLVING FALL-BOARD, when shut. See page 8.



Style No. 12.

Length, 4 ft. 5 in. Height, 3 ft. 1 in. Depth, 2 ft. 3 in. Weight, 255 lbs.

would alone render them worth much more than any possible difference in price between them and the poorest organs.

PATENTED IMPROVEMENTS AND PECULIARITIES OF CONSTRUCTION.

THE superiority of the Mason & Hamlin Cabinet Organs is derived from extraordinary excellence material and workmanship, peculiar skill in construction, especially in voicing; the employ-

ment of patented novelties of construction; improved processes of manufacture; and the observance of certain conditions as to material and minute arrangements. The liberal policy pursued by the

Style No. 46.—Extra Finish.—TWO MANUALS, FOUR SETS REEDS, RESONANT. NINE STOPS. (1. Bourdon; 2. Diapason Base; 3. Diapason Treble; 4. Vox Humana; 5. Hautboy; 6. Principal Base; 7. Principal Treble; 8. Coupler; 9. Automatic Swell.) Having two manuals and four sets Vibrators throughout, one of four feet pitch, two of eight feet, and one sixteen feet; with IMPROVED VOX HUMANA and AUTOMATIC SWELL; Self-adjusting Reed-Valves; Improved Bellows; two Knee-Swells; Extra Ivory and Ivory fronts to Keys; Clothed Mortises, etc. HEAVILY PANELED FRONT AND SIDES, CARVED ANTES.

From E. H. JONES, Esq., Southampton, England.

My Cabinet Organ, in Resonant Case (No. 46), and with Vox Humana, gives me more pleasure than I can express. The quality of tone is exquisite. How such purity of tone can be got out of reeds is a perfect marvel. It is comparable to nothing but the effect of a large and powerful pipe organ at some distance. Indeed, in capacity for delicate effects of light and shade—from full power down to the softest whisper, which the ear can hardly catch, but listens for attently because it is so precious—it has advantages which even a pipe organ has not. To compare it to a Harmonium is to compare an Amati Violin to a Hardy Gurdy. I tried one of Debain's very best Concert Harmoniums after it on Friday, and it jarred all my nerves with its buzz. The tone of the Mason & Hamlin Organ spoils the ear for anything less pure than itself.—E. H. JONES, *Organist, Southampton, England.*

From DR. J. STAINER, Organist of St. Paul's Cathedral, London.

I have been very much pleased with your Organs on all occasions on which I have had to play upon them. Their tone is remarkably pure and free from reediness, and their touch all that could be desired.—J. STAINER, *Mus. Doc.*

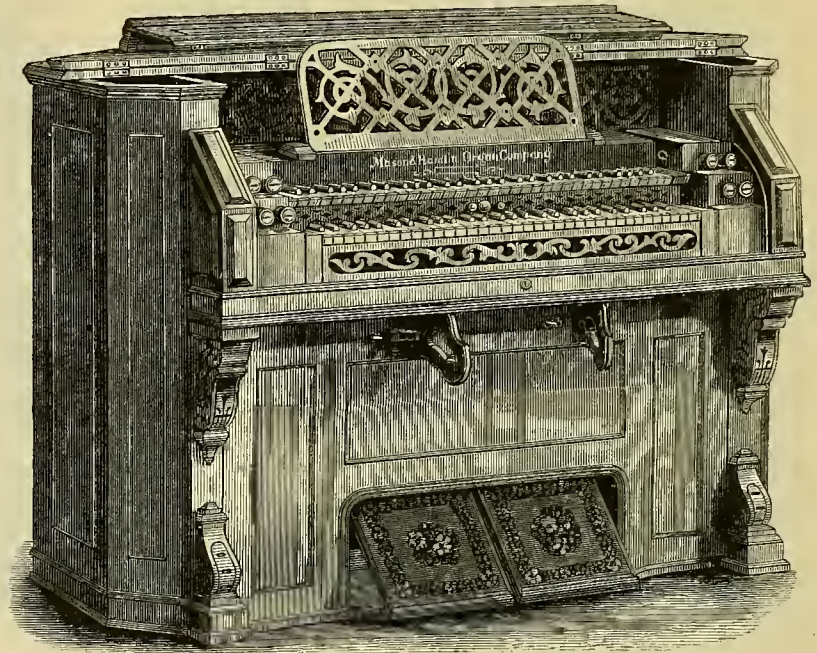
Style No. 43.—Extra Finish.—TWO MANUALS, FIVE SETS REEDS, RESONANT. THIRTEEN STOPS. (1. Diapason Treble; 2. Diapason Base; 3. Principal Treble; 4. Principal Base; 5. Gamba Treble; 6. Gamba Base; 7. Bourdon Treble; 8. Bourdon Base; 9. Euphone; 10. Expression; 11. Vox Humana; 12. Coupler; 13. Automatic Swell.) Having five full sets of Vibrators throughout, one of four feet pitch, and one of eight feet to upper manual; two of eight feet and one of sixteen to lower manual; AUTOMATIC SWELL and EUPHONE; and one Knee-Swell to upper and one to lower manual; Self-adjusting Reed-Valves; Improved Bellows; Clothed Mortises, etc. RESONANT CASE; PANELED AND CARVED; EXTRA IVORY AND IVORY FRONTS TO KEYS, ETC.

From MINNA PESCHKA-LEUTNER, the eminent artist.

I have never seen any reed instruments equal to your Cabinet Organs. They are far superior to the French and German Harmoniums which I have examined. Their tone is pure and musical, the action light, and readily responsive to the touch. In short, the instruments are in every way charming and delightful.—MINNA PESCHKA-LEUTNER.

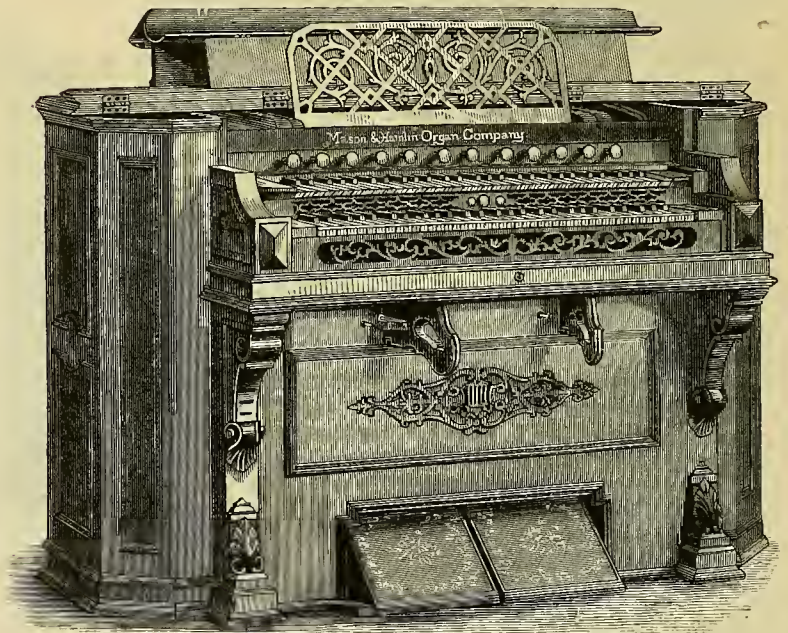
From JOHANN STRAUSS, the well-known composer of the STRAUSS WALTZES, etc.

The fame of the MASON & HAMLIN CABINET ORGANS is not confined to America; these excellent instruments are widely known in Europe, and in my opinion they richly deserve the warm expressions of praise which have been bestowed upon them. I know of no similar instruments anywhere, at all comparable to them.—JOHANN STRAUSS.



Style No. 46.—Resonant.

Length, 5 ft. 1 in. Height, 3 ft. 7 in. Depth, 2 ft. 4 in. Weight, 300 lbs.



Style No. 43.—Resonant.

Length, 5 ft. 1 in. Height, 3 ft. 3 in. Depth, 2 ft. 4 in. Weight 350 lbs.

Company in persevering experiments and in obtaining the use of every real improvement made elsewhere, at whatever cost, has given them the exclusive control of the most important improvements made in such instruments for many years, and the use, in common with others, of all other inventions, not exclusively controlled by them. The value of the improvements they have themselves effected, and exclusively control, is proved by the award to them by

the MASSACHUSETTS CHARITABLE ASSOCIATION, of its GOLD MEDAL and the AUSTRIAN INDUSTRIAL SOCIETY at VIENNA, of its GRAND MEDAL and DIPLOMA of HONOR; the highest medals of the AMERICAN INSTITUTE, New York; FRANKLIN INSTITUTE, Philadelphia, and other principal organizations in the country, especially for such improvements. *They are not aware of any real improvement in such instruments; or desirable feature in them, or better process of manu-*

Style No. 28.—*Extra Finish.*—FIVE-OCTAVE, THREE SETS REEDS, with SUB-BASE and OCTAVE COUPLER. SEVEN STOPS. (1. Diapason; 2. Melodia; 3. Viola; 4. Flute; 5. Sub-Base; 6. Vox Humana; 7. Octave Coupler.) With PIPE-ORGAN TOP. Two sets Vibrators throughout; one of four feet pitch, one of eight feet; with one octave of SUB-BASE connected with the Manual; also, OCTAVE COUPLER, giving effect of four sets of reeds; Improved VOX HUMANA and AUTOMATIC SWELL; Self-adjusting Reed Valves; Improved Bellows; Knee-Swell; Extra Ivory and Ivory fronts to Keys; Clothed Morises, etc. HEAVILY PANELED FRONT AND SIDES, WITH RICH CARVING, PIPE-ORGAN TOP, RICHLV GILT PIPES.

FIRST AMONG MAKERS—A PLEASURE TO A MECHANIC—STANDARD HIGHEST—SUCCESS LEGITIMATE.

It is perhaps a question as to who stands *second* among makers of reed organs in this country; but there is no difficulty in deciding who is *first*. By general acquiescence this position is conceded to the Mason & Hamlin Co., and even competing manufacturers are in most cases satisfied to claim that their productions *equal* the organs made by this Company. They enjoy like pre-eminence in the extent of their business, their production and sales during the last year having been very much greater than those of any other maker—probably more than twice as great. What their sales would have been could their production have been increased cannot be known, for they have always been hundreds of organs behind orders.

This is a legitimate and deserved success; for to this Company is due credit for the more important improvements which have lifted this class of instruments from the almost despised place they occupied when the melodeon was their best representative, and made them what they now undoubtedly are, the most popular and widely useful of large instruments. When Mason & Hamlin commenced business, less than twenty years since, they found the field already occupied by a number of those who are still among the prominent manufacturers of the country. If the Mason & Hamlin Organ Co. were inclined to boast, it could not be that they are among the oldest makers in the country; but that, being younger than so many, they have yet far outstripped all in the reputation of their work and extent of their business. It is noticeable that, while they have been untiring in seeking for additions and improvements, they have been not less earnest and determined in applying principles already understood, and in securing to their work that advantage which comes from the employment of the best skill and most scrupulous care, both as to material and workmanship. It is a pleasure to a mechanic to examine the work of this Company. In all parts of the interior, as well as exterior, of every instrument, lowest priced as well as highest priced, will be found the same skillful and thorough work. Everything is the best of the kind; there is nothing slighted, nothing passed with the idea that it "will do." The standard is the very highest, and is rigidly maintained.

The extraordinary success achieved by this Company is, therefore, the result of legitimate means. It comes from the exercise of superior skill, energy, and care; from making the best article, and we may add, selling it at the lowest price; for it is a part of the policy of this Company to sell always at least remunerative profit. As a consequence, their work, notwithstanding its superiority, is sold at prices which are not higher than those commonly asked for very inferior instruments.—*New York Watchmaker and Jeweler.*

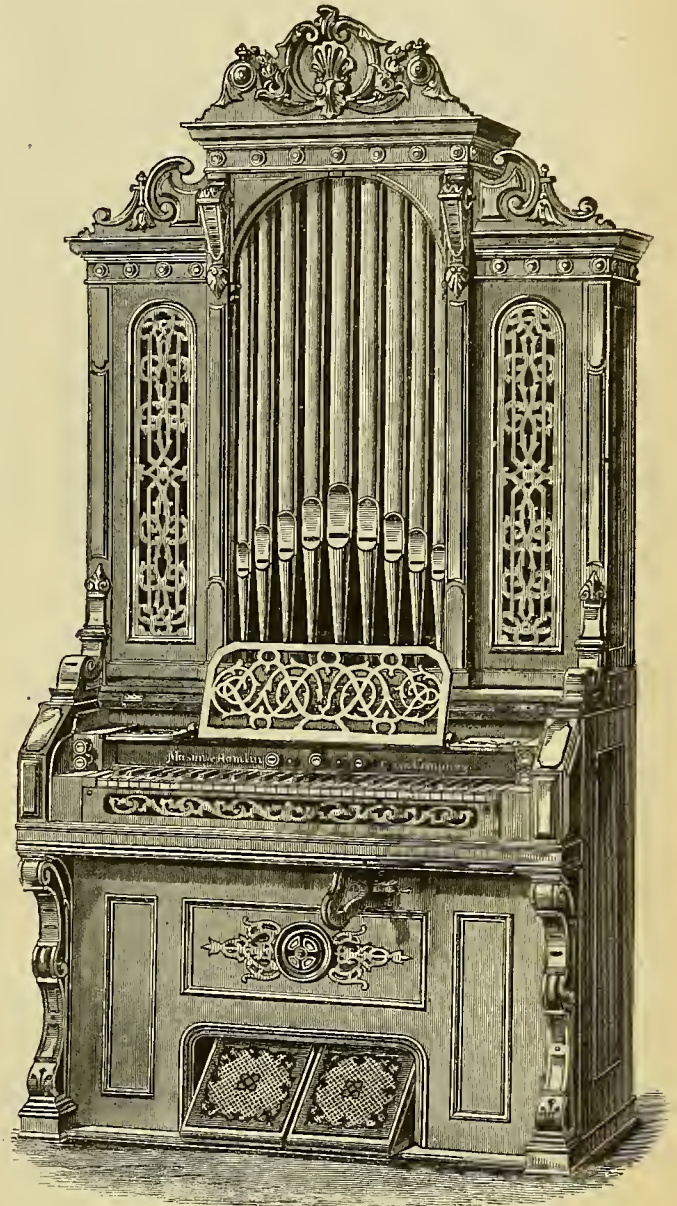
Rev. C. DE HEER writes from the West Coast of Africa, as follows: "Ever since our arrival in Africa we have purposed writing, to express not only the satisfaction, but the pleasure, we experience in our organ. For years it kept in perfect order in this most trying of all climates upon delicate machinery; and now we have, even in our small Mission circle, no less than three instruments perfectly useless, while ours discourses sweet music, unaffected by external surroundings."

From PRINCE PONIATOWSKI, the distinguished Composer, London.

Your American Organs, by Mason & Hamlin, are marvelous in the quality and purity of their tone, which so much resembles that of the pipe organ. The effects to be produced by the variety of stops are admirable.

facture yet effected in any part of the world, which they have not secured the right to use.

On the other hand, they have been equally careful to avoid attachments which are not of real value, but add to the liability of the instrument to get out of order. As is natural from the reputation of this Company, and the fact that they are much the largest manufacturers of this class of instruments in the world, almost every invention that is a supposed improvement is first offered to them. Scarcely a week passes without the offer of some such novelty. These are all carefully examined and tested, and every one of real value is secured. Experience proves, however, that not one in fifty is of such character. It is a fact that many so-called improvements



Style No. 28.

Length, 4 ft. Height, 8 ft. Depth, 2 ft. Weight, 278 lbs.

are positive injuries to the instruments in which they are introduced merely to have something to advertise.

The following peculiarities of construction in these instruments may be mentioned:

Selection and Preparation of Material.—Only the *very best material obtainable* is used in these organs. Some of this involves double the cost to the manufacturers of material of the quality commonly used. The best processes known to art are employed in the preparation of lumber, that it may be fitted to withstand the most trying influences of climate and temperature. All the lumber used in the nicer parts of the instruments, besides prolonged seasoning in the open air, and in drying-kilns, is subjected to a **NEW PROCESS** of curing by superheated steam.

Style No. 32.—Extra Finish.—TWO MANUAL, FOUR SETS REEDS, with PIPE-ORGAN TOP, GILT PIPES. NINE STOPS. (1. Bourdon; 2. Diapason Base; 3. Diapason Treble; 4. Hautboy; 5. Vox Humana; 6. Principal Base; 7. Principal Treble; 8. Coupler; 9. Automatic Swell.) Four sets of Reeds throughout; one of four feet pitch, one of eight feet to upper manual; and one of eight feet pitch, and one of sixteen feet to lower manual; having AUTOMATIC SWELL, one Knee Swell for the upper and one for lower manual; Self-adjusting Reed-Valves; Improved Bellows; Clothed Mortises. CASE WITH PIPE-ORGAN TOP, WITH CARVED ORNAMENTS AND OPEN WORK PANELS; EXTRA IVORY AND IVORY FRONTS TO KEYS, ETC.

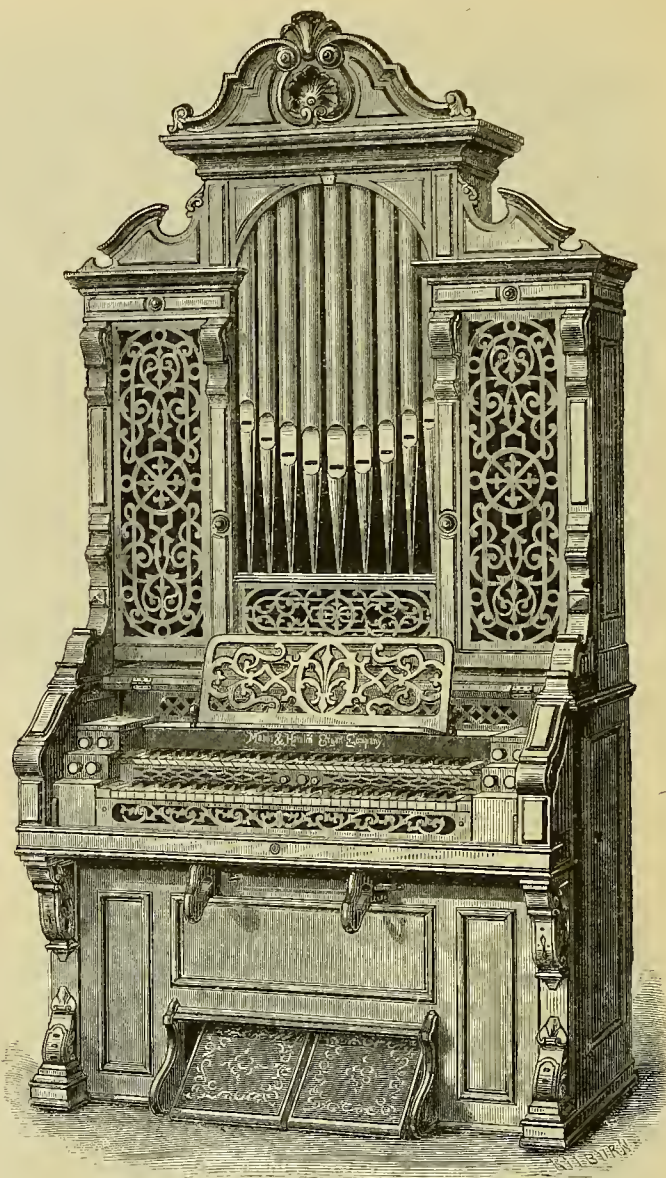
The styles with Pipe-Organ tops prove very attractive. The richly gilt pipes add very much to the appearance of the instrument. They are, of course, only imitation pipes, the works being all in the lower part. Experience has shown, however, that the addition of the top favorably affects the tone of the instrument.

The following from the *New York Christian Advocate*, written by its editor in chief some years since, is yet more true to-day than when it was written; as the popularity of the instrument has extended, the number of incompetent makers has increased. There are now few articles in reference to which the public is more deceived and imposed upon than in parlor or cottage organs. This is attested by the thousands of such instruments now standing utterly useless, all over the country, which are but a few months or years old.

CABINET OR PARLOR ORGANS.

As usual in such cases, the new and large demand for these instruments has induced a great number of persons to engage in their manufacture, some of whom are quite unequal to the business they have undertaken. It requires something more than the mechanical skill of the artificer in wood and iron to make and prepare for use a musical instrument; and yet some have evidently brought nothing else to their aid in the business. The result is that the country is becoming filled with inferior and defective instruments. Large sums of money are expended for valueless articles, and the people are defrauded of their needed musical education. The evil is intensified by the fact that these inferior instruments are, on account of their inferiority, most industriously urged upon the public. Because they can not compete with better ones in the open market, they are pressed upon the public by direct solicitations; and because they offer larger commissions, they are those most commonly offered by agents and hawked by peddlers. And as most purchasers are unable to judge of the relative merits of these things, the inferior articles are often bought when better ones are desired, and would be cheerfully paid for.

Induced by these considerations, we have been at some pains to ascertain what instrument of the many now soliciting the public favor combines the greatest amount of real excellences. We have prosecuted this inquiry entirely independently of aid or direction from interested parties. The opinions of some of the best musical critics, composers, and performers have been obtained; reports of experiments made in the ordinary use of various instruments in churches, schools, and families have been compared, all of which with singular unanimity concur in assigning the first place to the Cabinet Organ of MASON & HAMLIN—a decision that corresponds with our own previously formed convictions. . . . We have written these things without solicitation from any one, and without the knowledge of those whose pecuniary interests we may seem to favor. The interest of our readers is the object we have sought especially to promote, and in that interest we have prosecuted our inquiries, and now we record our convictions.—*New York Christian Advocate*.



Style No. 32.

Length, 4 ft. 8 in. Height, 8 ft. 4 in. Depth, 2 ft. 5 in. Weight, 193 lbs.

In purchasing an organ the person selecting has no means of judging such things as these, and even a skilled mechanic, with best opportunity for examining, cannot fully determine respecting them. Yet they may make all the difference between a good organ and a poor one—between one which will last a lifetime, and one which will become useless in a few years.

Vibrators or Reeds.—The materials used and principles observed in form, size, and position of these, are the result of extended experience and untiring experiment. They are manufactured, from *thick* substantial brass; by peculiar machinery invented and perfected in the factory of Mason & Hamlin, and each one is afterward carefully finished by hand. More complete uniformity and thoroughness of construction are thus secured than can be realized in vibrators made entirely by hand or by less perfect machinery. Reeds can be made of thin brass, costing less for material

and manufacture, and only *half as much* for voicing, thus effecting a material saving in the cost of the organ. But such reeds will give inferior tone, and be very likely to get out of tune, break, or rattle.

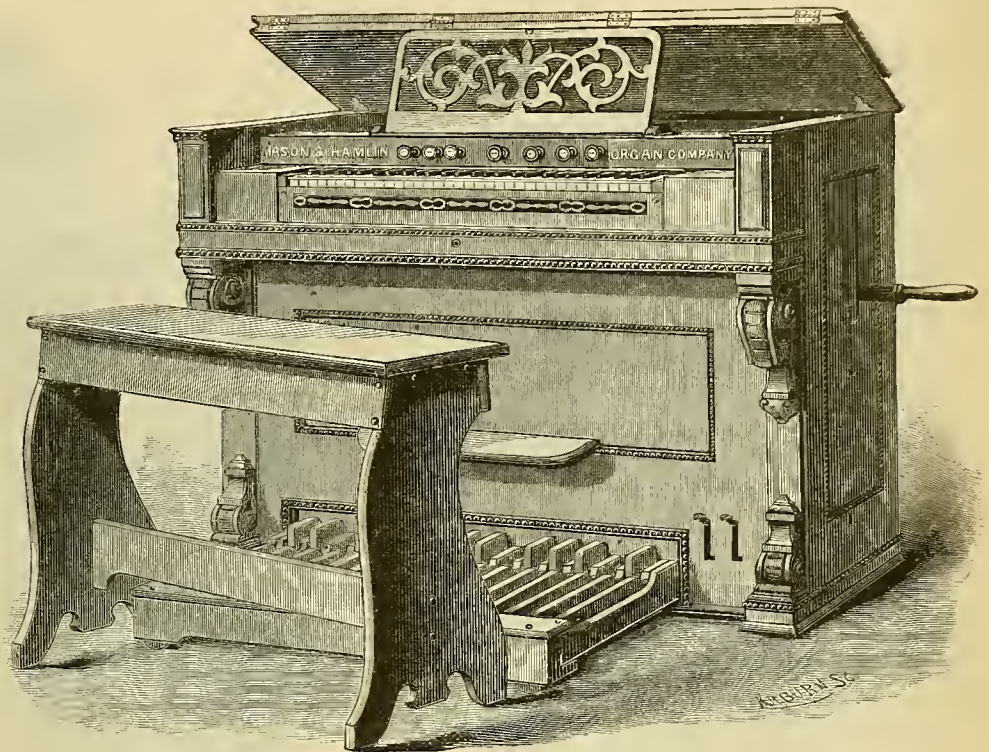
Voicing.—The reed or vibrator is a strip of brass, from a fraction of an inch to several inches in length, and rarely exceeding half an inch in width. This is the actual tone-producer of the instrument, and is thus its most important part. As formerly used, these were left perfectly flat and straight, producing the thin reedy tones which were once characteristic of instruments of this class. It is now about twenty-five years since Mr. EMMONS HAMLIN, one of the founders, and the director of the factories of the Mason & Hamlin Organ Co., discovered that by giving to the reed a peculiar bend and twist, the quality of tone was greatly modified and improved. This was the discovery or invention of what by patient experiment and skill has been developed into the art of *voicing*

Style H.—PEDAL BASE ORGAN. FOUR SETS REEDS, with OCTAVE COUPLER. SEVEN STOPS. (1. Viola; 2. Diapason; 3. Melodia; 4. Flute; 5. Octave Coupler; 6. Bourdon Pedals; 7. Violoncello Pedals.) Having two sets of Vibrators throughout the manual, one of four feet pitch, and one of eight feet; with Octave Coupler, giving nearly the effect of four sets; and two independent sets to pedals, one of eight feet pitch, one of sixteen feet; Pedal Key Board is full organ scale, twenty seven notes; Blow-handle at back, and Blow Pedal by which the performer can himself supply the wind; Foot Swell; Improved Reed Valves, etc. Accompanied by Black Walnut Seat for performer.

Observe that this has *two independent sets of reeds in the pedals*, besides two entire sets and Octave Coupler in the manuals, giving nearly the effect of six sets of reeds.

From CARL ZERRAHN, Conductor of the Orchestral Union, Handel and Haydn Societies, etc., Boston.

It gives me pleasure to say that I think your organs are much the best of the class made; excelling in quality of tone, general excellence, and durability; and presenting valuable improvements not found in others. Long acquaintance with, and frequent opportunity for testing and comparing them with others, enables me to give this opinion with confidence. I believe the wide introduction and use of such instruments is doing much for popular-musical cultivation, and to render possible Musical Festivals still more mighty than that which we have so recently enjoyed in Boston.



Style H.

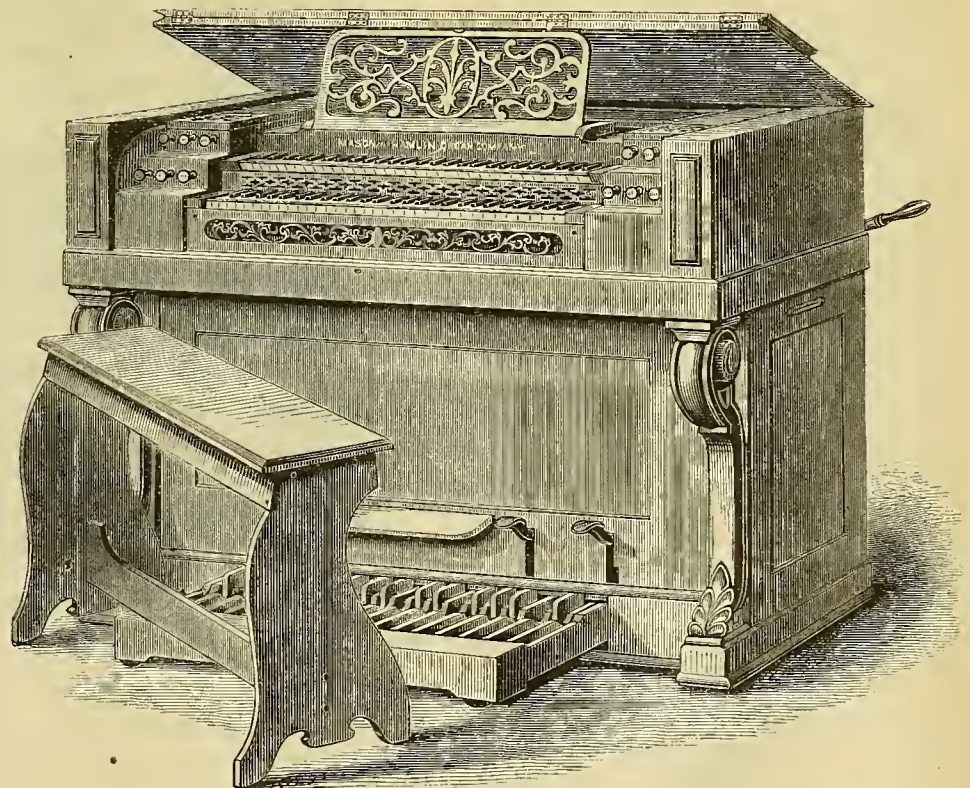
Length, 4 ft. 8 in., without blow-handle; 5 ft. 10 in., with. Height, 3 ft. 6 in. Depth, 2 ft. 8 in., with pedals in; 4 ft., with pedals out. Weight, 350 lbs.

Style No. 10.—*Extra Finish.*—TWO MANUAL AND PEDAL-BASE ORGAN. SIX SETS REEDS. TWELVE STOPS. (1. Principal Base; 2. Principal Treble; 3. Diapason Treble; 4. Diapason Base; 5. Hautboy Treble; 6. Hautboy Base; 7. Bourdon Treble; 8. Bourdon Base; 9. Manual Coupler; 10. Pedal Coupler; 11. Violoncello Pedals; 12. Bourdon Pedals.) Having four sets of Vibrators to manuals; one of four feet pitch, one of eight feet to upper manual; and one of eight feet and one of sixteen feet to the lower manual; two independent sets Vibrators to the pedals, one of eight feet pitch, and one of sixteen feet. Pedals full scale, twenty-seven notes; Manual Coupler and Pedal Coupler; Improved Bellows, with hand-lever at back, and Blow Pedal in front for performer; Foot-Swell; Clothed Mortises, etc. EXTRA IVORY AND IVORY FRONTS TO KEYS; accompanied by Black Walnut Seat for performer.

Notice that, besides four full sets of reeds in the manuals, there are two independent sets in the pedals, and also Pedal and Manual Couplers so that each pedal commands *six different reeds*. It is common in Pedal-Base Organs to have *no independent reeds to the pedals*, or at best but one set, merely coupling to the reeds used for the manuals.

From J. L. HATTON, the eminent Composer, London, England.

I have always entertained the opinion that Mason & Hamlin's Cabinet Organs are of the very best class of that description of instrument. The tone is beautiful—the touch is light and very elastic. Those instruments that are supplied with pedals give the amateur every opportunity of becoming acquainted with the grand music of old Sebastian Bach; and if they only persevere they will be amply rewarded.



Style No. 10.

Length, 4 ft. 11 in. Height, 3 ft. 7 in. Depth, 2 ft. 9 in. Weight, 400 lbs.

Style No. 29.—TWO MANUAL AND PEDAL-BASE ORGAN. SIX SETS REEDS, WITH PIPE-ORGAN TOP, GILT PIPES. TWELVE STOPS. (1. Principal Base; 2. Principal Treble; 3. Diapason Treble; 4. Diapason Base; 5. Hautboy Treble; 6. Hautboy Base; 7. Bourdon Treble; 8. Bourdon Base; 9. Manual Coupler; 10. Pedal Coupler; 11. Violoncello Pedals; 12 Bourbon Pedals.) Having four sets of Vibrators to the manuals; one of four feet pitch, and one of eight feet to the upper manual; and one of eight feet and one of sixteen feet to the lower manual; two independent sets of Vibrators to the Pedals, one of eight feet pitch, and one of sixteen feet; Pedals full scale, twenty-seven notes; Manual Coupler and Pedal Coupler; Improved Bellows, with Hand-Lever at back and Blow-Pedal in front for performer; Foot Swell; Clothed Mortises, etc. PIPE-ORGAN TOP, WITH EXTRA GILT PIPES. EXTRA IVORY, AND IVORY FRONTS TO KEYS. Accompanied by black walnut seat for performer.

TEST—COMPARE—JUDGE.

The Mason & Hamlin Company invite the most searching and thorough examination and comparison of their organs, from lowest to highest priced, and this by the most competent judges. Sure that the relative superiority of their work is now even greater than ever before, they are confident they have much to gain and nothing to lose by such tests. Musicians will find that in quality and quantity of tone, in proportion, variety, convenience for use, and all other excellences, these Organs now possess, *in an even higher degree than ever before*, those merits which have won for them the pre-eminent reputation they enjoy. Mechanics will perceive that every instrument and every part of every one, interior as well as exterior, is made in the most thorough and workmanlike manner, of the best material.

Much as this Company value the unprecedented mass of testimonials to the superiority of their Organs which has accumulated in their hands, their chief reliance is, nevertheless, upon the intrinsic superiority of their work, which they are sure will be evident to competent judges who thoroughly examine and compare; and they are equally certain that the more thorough and searching are such examinations, the more considerable will be the evident superiority.

THE ARTISTS OF THE OPERA TO MASON & HAMLIN.

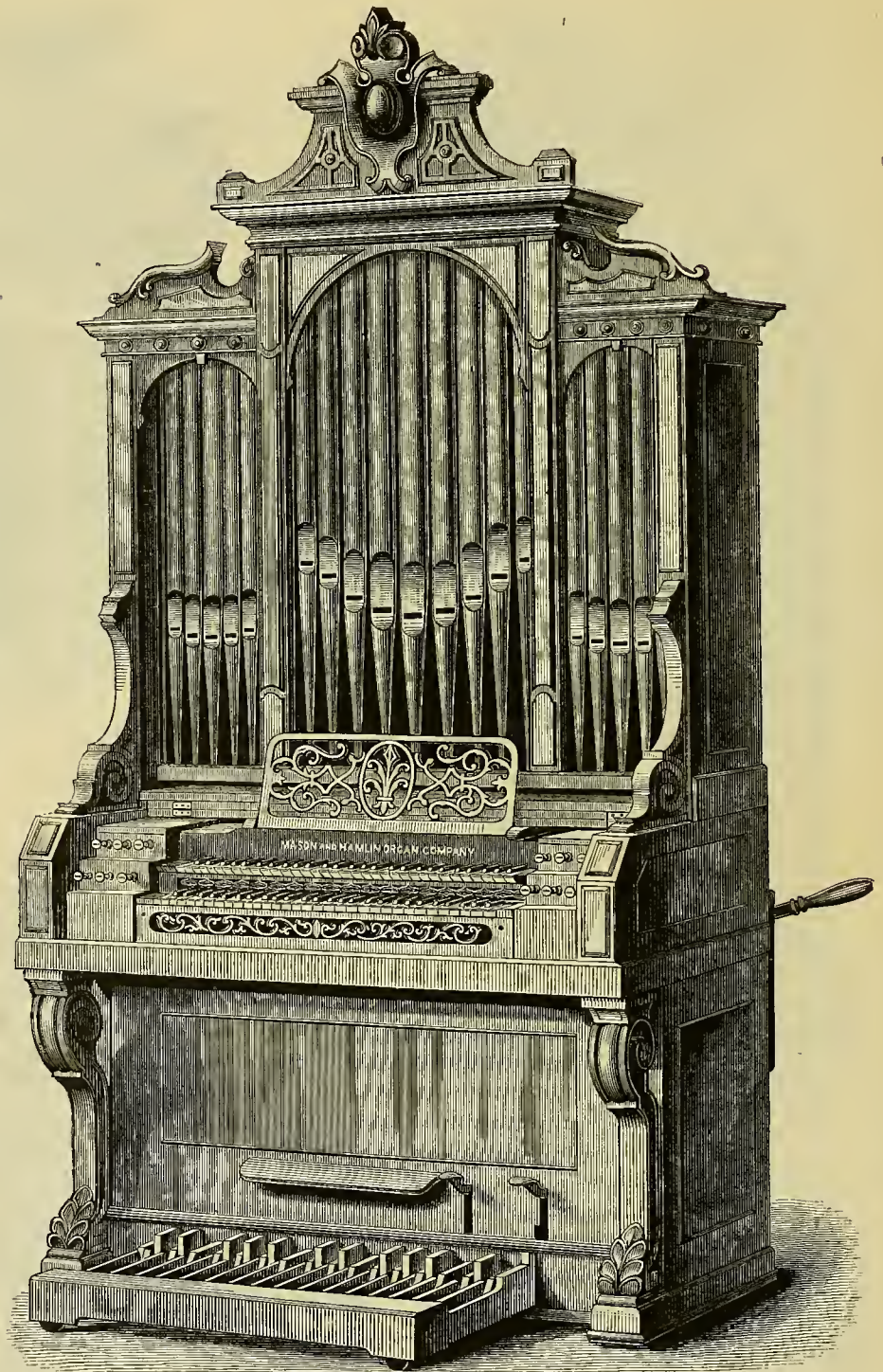
The very extensive reputation which the Mason & Hamlin Cabinet Organs have acquired, is the result, in large measure, we think, of their SUPERIORITY IN QUALITY OF TONE to all other instruments of this class, which is obvious to every cultivated ear. We know not what peculiar secret or skill these makers possess, but certainly we have not heard such pure musical tones from any other reed instrument either of American or European manufacture. For other improvements effected by Mason & Hamlin, they deserve much credit, and their Cabinet Organs must come into very wide use by artists. We should not think of selecting any other instrument of this class for our own use.

CARLOTTA CAROZZI ZUCCHI,
ADELAIDE PHILLIPS,
B. MASSIMILIANI,
ETTORE IRFRE,
G. B. ANTONUCCI,
A. TORRIANI, *Conductor*,

CLARA LOUISE KELLOGG,
FRANCESCO MAZZOLENI,
D. B. LORINI,
T. BELLINI,
A. ARDAVANNI,
CARL BERGMANN, *Conductor*,
MAX MARETZEK.

BERTHA JOHANNSSEN,
SOPHIE DZIUBA,
THEODOR HABELMANS,
J. ARMAND,
WILHELM FORMES,
JOS. WEINLICH,

JON'NA DEFFENBACH ROTTER,
ELVIRA NADDIE,
JOSEPH HERMANN,
FRANZ HIMMER,
H. STEINECKE,
AD. NEUENDORFF, *Conductor*,
LEONARD GROVER.



Style No. 29.

Length, 4 ft. 10 in. Height, 9 ft. Depth, 2 ft. 11 in. Weight, 583 lbs.

reeds, which has since become universal in this country, and which has done more than any other thing toward that improvement of the instrument which has won its present popularity. But as this is the most important, it is also one of the most difficult processes in the construction of the instrument. No rule can be established,

or model set before the workman. The peculiar form of the reed must vary according to its size, pitch, position, and the quality of tone desired. Under the direction of its inventor this art has been carried to the greatest perfection in the factories of the Mason & Hamlin Co. They claim especial excellence in the voicing of their

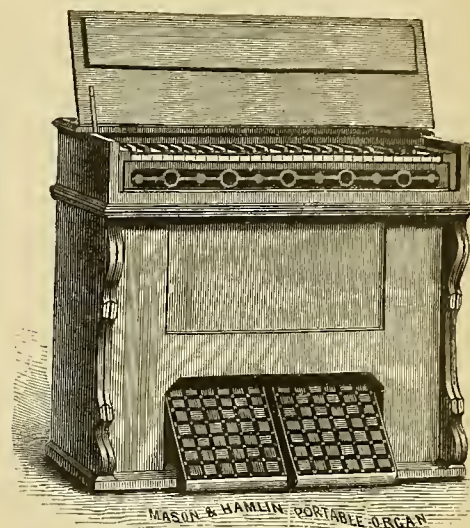
Style No. 1, Portable.—FOUR-OCTAVE, SINGLE REED. With Automatic Swell, Improved Bellows, Two Blow Pedals, Improved Reed Valves, etc.

Style No. 3, Portable.—FOUR-OCTAVE, DOUBLE REED. With KNEE STOP, Automatic Swell, Improved Bellows, Two Blow Pedals, Improved Reed Valves, etc.

Exactly resembles No. 1 in size and appearance, except that it also has a Knee Stop.

THE FOLLOWING ARE FROM PURCHASERS OF PORTABLE ORGANS.

(Style 3, Portable.) Much greater power than any \$200 organ that I have ever seen, and it is finished as well as the \$150 organ of other makes.—WILL. W. IVES, *New Haven Co., Ct.* (Style 1—Portable.) It is a perfect gem among musical instruments; far exceeds my expectations. The automatic Swell adds greatly to its power and beauty of tone, and if any one has \$55 to spend for an instrument, they cannot do better than buy one like this.—JOHN CHANDLER, *Branch Co., Mich.* (Style 1, Portable.) Its tone is remarkably clear, full, and accurate; and it has been a matter of surprise among my friends how you can afford to sell so good an instrument, in such a handsome and well-made case, at so low a figure.—THOMAS B. NEWBY, *Carroll Co., N. H.* (Style 1, Portable.) Surpasses my expectations. Hope my friends who have not much money will follow my example. Think they will, when they find what a good instrument can be procured for the small sum of \$55.—M. E. JUSTASON, *Charlotte Co., New Brunswick.* (Style 3—Portable.) I am well satisfied with it. Its tone is soft, clear, and bold. Some instruments, said to be worth from \$150 to \$300, are not to be compared with it in power of tone.—JOHN BELL, *Strafford Co., N. H.* (Style 1, Portable.) Gives great satisfaction. In my opinion it is superior to one of —'s, in the Methodist Church, which cost three times the money.—N. BALLANTYNE, *Poweshiek Co., Iowa.* (Style 3.) I am very highly pleased with it; think it far superior to any other of the size, and would not take double what I gave if no other of the kind could be got.—ROSE MOSHER, *Fillmore Co., Minn.*



Style No. 1.—Portable.

Length, 2 ft. 8 in. Height, 2 ft. 5 in. Depth, 1 ft. 5 in.
Weight, 70 lbs.

ORGAN BENCHES.

Organ Bench No. 1.—This is made entirely of Black Walnut, and is smoothly finished. Its form and appearance will be better shown by the cut than by any description. An important feature is that the top or seat slightly inclines towards the organ. This tends to keep the performer in an upright position, and renders it easier to blow; the motion of the feet being similar to that in walking.

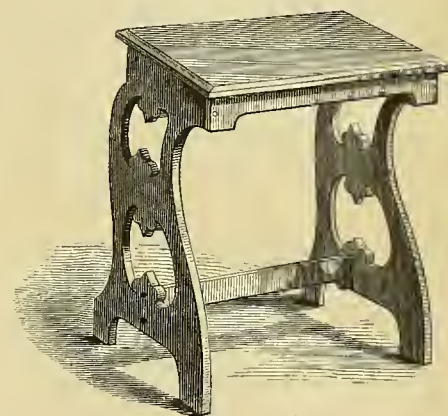
Any bench can be reduced in height by cutting off as much as may be necessary from the legs.

Being put together entirely by screws, a bench can be taken apart and packed in the box with any one of our organs, except Style 1 or 3. Only a screw-driver is necessary to put it together.

From the Rev. ALFRED TAYLOR, Sec. Am. Sunday School Union, Phila.

"At the numerous Sunday School conventions and institutes which I attend, I generally find some portable reed instrument, good or bad, old or new. The Mason & Hamlin are the sweetest-toned, the most manageable, and, even when they bear the mark of age, the most reliable, and least liable to get out of order. The advantages of the Automatic Swell are not approached by the swell arrangements or any other make of instrument."
ALFRED TAYLOR.

"Very beautiful instruments—the BEST now in use."—CHRISTINE NILLSON, ANNA LOUISE CARY, MARIE LEON DUVAL, VICTOR CAPOUL, P. BRIGNOLI, etc.



Organ Bench No. 1.

Length, 21 in. Width, 12 in. Height, 24 in.

instruments; that no other instruments of the class in the world are voiced with nearly equal skill. This advantage is largely instrumental in their superiority in tone.

Sounding and Tube-Boards.—In pianofortes the *sounding-board* has long been recognized as the very life of the instrument; but its importance in reed instruments was only recently realized. From the observance of right conditions in respect to the material, size, plan, and details of construction of the SOUNDING and TUBE-BOARDS, especially in connection with the RESONANT CHAMBERS in the new styles, the Mason & Hamlin Cabinet Organs derive much of that musical power and sonorous quality of tone for which they are noted.

Attention is invited to the new styles in RESONANT CASES. In these the greatest amount of resonance possible is secured, and the tones will be found peculiarly full and rich.

Improved Centre - Pressure Self - Adjusting Reed Valves.—No part of the instrument is of more importance than the valves admitting the air to the vibrators, one of which must be

opened and closed for every tone produced. On their perfect action and durability must depend, very largely, the quality and uniformity of tone, rapidity of utterance, and freedom of the instrument from liability to get out of order. The action of the improved valves, employed exclusively in these instruments, is more instantaneous, sure, and perfect than that of any others; and the slight springing or warping of the tube-board, which it is sometimes impossible to prevent, when the instrument stands in an unfavorable position, does not interfere with their perfect action. The pressure upon all parts of the valve-seat is exactly equal, securing a most perfect closing of the aperture, and preventing that liability, so common and vexatious, of tones sounding when they should not—when the keys are not pressed down. These valves also render it practicable to use a lighter action, and to employ a current of air of greater force, by which more perfect vibration of the reed is produced, and the volume of tone is increased, its quality improved, and better capacity for expression is produced.

The Automatic Bellows Swell.—This is much the most perfect swell in existence, as well as the most easily used. By no other can as perfect *crescendos* and *diminuendos* be produced, nor can any other swell be effectively used with so little practice. It tends to prevent the instrument from sounding out of tune, by counteracting the effect of the varying pressure of wind upon the reeds; and in other respects improves the quality of tone. It gives wonderful capacity for light and shade, and makes an instrument, which without it must be comparatively tame and expressionless, one of the most expressive of all. By its aid the player is enabled, without any unusual movement of hands or feet, to command, at will, any degree, from the loudest to the softest tones of the instrument. This is effected simply by blowing. The power of tone is regulated by the quickness of motion of the blow-pedals. A crowning excellence of this swell is its perfect simplicity and freedom from liability to get out of order.

The value of the AUTOMATIC BELLOW SWELL is proved, not only by the warm approval of musicians and the many medals awarded it, but also by the numerous attempts to imitate or find a substitute for it; none of which, however, approach it in excellence. At the Paris Exposition, its great value was fully recognized by the jury as well as the musical profession. This swell is especially effective in connection with the IMPROVED VOX HUMANA; without it the latter would be comparatively incomplete and ineffective.

The Mason & Hamlin Improved Vox Humana is one of the most popular improvements ever introduced. It adds new charms to the instrument, requires no additional skill for its use, and is free from liability to get out of order. It produces a variety of very brilliant orchestral and solo effects, including a remarkable imitation of stringed instruments; also the nearest approach to the peculiarly sympathetic, rich, and attractive quality of a cultivated human voice yet attained in any reed instrument.

The effect of this invention is especially beautiful when it is used in connection with the AUTOMATIC BELLOW SWELL, which wonderfully increases its power of expression.

This IMPROVED VOX HUMANA is a combination of several patents, and in its improved form will be used only in the Mason & Hamlin Organs. It should not be confounded with the VOX HUMANA announced in other instruments, which is in some cases nothing more than the common *valve tremulant*, and in no case has all the Mason & Hamlin patented improvements.

Resonant Cases.—For the important improvements presented in these, two patents were granted the Company; one June 21st, and the other August 23d, 1870. A new form is given to the case of the organ, providing RESONANT CHAMBERS of peculiar form and construction, and adding materially to the resonance and fullness of tone of the instrument. The improvements, then, are in substantial excellence, and not in the application of a fanciful attachment, pleasing from its novelty, perhaps, but likely soon to become wearisome. These chambers act somewhat as does the sounding-board of the pianoforte, adding wonderfully to its excellence. An incidental though not slight advantage is the improved form of the instrument,

especially in the UPRIGHT RESONANT CASES introduced this season. The square, box-like form, which is common and often objected to, is superseded by a design much more graceful and elegant.

Octave-Coupler.—In effect this nearly doubles the power of the instrument in which it is used, enabling the performer to produce not only tones immediately connected with a particular key of the instrument, but also their octaves, by touching one key. The patent Coupler, used only in Mason & Hamlin Organs, is free from the liability to get out of order which is so great an objection to other Couplers.

A Double Bellows, of peculiar construction, is employed, having two blow-pedals, so placed that they are worked by the feet with the greatest facility. This bellows is more easily operated and more completely under the control of the performer than any other, while by its means the instrument is supplied with several times as powerful a current of wind as can be produced by the melodeon bellows.

The Revolving Fall-Board is an invention of considerable utility, for which a patent was granted this Company, October 28th, 1873. Its advantages are:

1. The instrument is opened by a single movement of one hand.
2. The fall-board, by which the keys are covered, passes entirely out of sight, except its edge.
3. No hinges are employed, to get out of order, or tarnished, and mar the rich appearance of the instrument.

This fall-board has, therefore, as compared with others, greater convenience and beauty, with less liability to get out of order.

The Full Organ Stop is practically one of the most important, and is the most recent improvement for which a patent has been granted this Company (January, 1874). It is applied as a KNEE-STOP, placed at the left of the performer. On being pressed to the *left* as far as it will go, it brings into use all the stops of the Organ. Thus it enables the performer to go instantly from any stop or stops to the full power of the Organ (by the use also of the SWELL), without removing his hands from the key-board. When suffered to return, as it will do by a spring, only the stops remaining drawn in the key-board are in use. It is also useful in covering changes in stops, in making a very effective swell, and in emphasizing a particular note or chord.

Every player will perceive the very great practical value of this improvement.

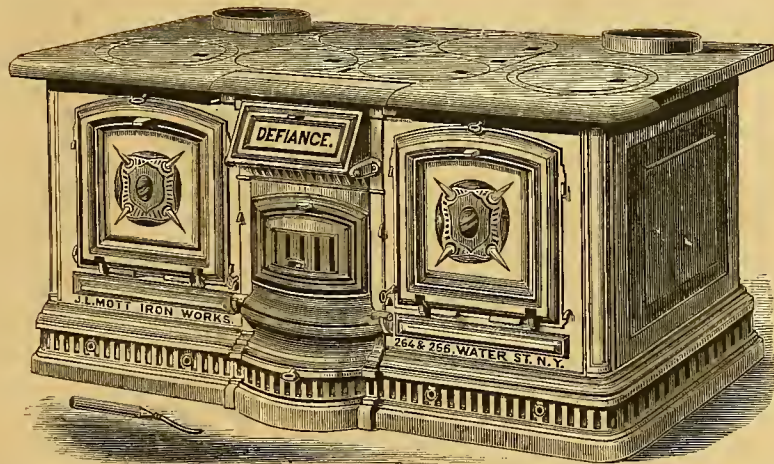
PARTICULAR ATTENTION IS CALLED TO THE FACT THAT THE MOST IMPORTANT OF THE ABOVE IMPROVEMENTS, AND OTHERS EMPLOYED, ARE PATENTED AND EXCLUSIVELY CONTROLLED BY THE MASON & HAMLIN ORGAN COMPANY, AND CAN BE FOUND ONLY IN THEIR INSTRUMENTS. This fact is made prominent, because, since such great reputation has been attained by the Mason & Hamlin instruments, and the demand has become so extensive, the claim is frequently made by other makers of reed organs that their instruments are the same things, and employ the same improvements.



ESTABLISHED 1828.

THE J. L. MOTT IRON WORKS,

J. L. MOTT'S



DEFIANCE RANGE.

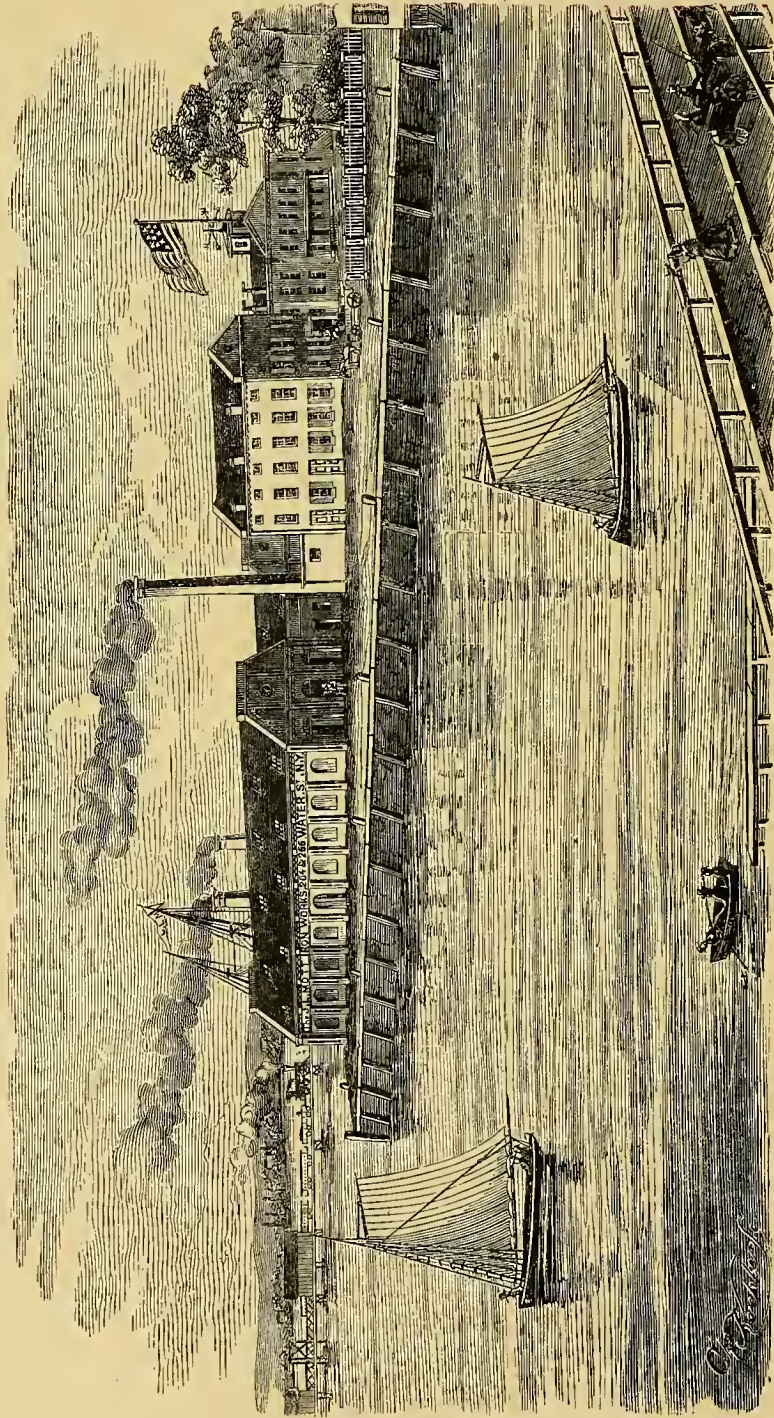
St. George Building, 90 Beekman St.

CORNER CLIFF, NEW-YORK.

E. D. Slater, Printer, 147 Fulton St.



THE J. L. MOTT IRON WORKS,



FOUNDRY AT MOTT HAVEN, WESTCHESTER CO. N. Y.

THE
J. L. MOTT IRON WORKS,

St. George Building,

90 BEEKMAN STREET, CORNER OF CLIFF,

NEW YORK.

STOVES, RANGES,

HOLLOW WARE,

Farmers' Boilers, Cauldrons, Steam Kettles,

LAUNDRY IRON HEATERS,

AND

STABLE FURNITURE,

FOUNDRY AT MOTT HAVEN, WESTCHESTER COUNTY, N. Y.

NEW YORK :

E. D. SLATER, STEAM BOOK AND JOB PRINTER,

MARBLE BUILDINGS, 145 & 147 FULTON STREET.

1871.

Illustrated Trade Circular.

The J. L. Mott Iron Works,

ESTABLISHED 1828.

ST. GEORGE BUILDING,

CORNER OF BEEKMAN AND CLIFF STREETS,

NEW YORK.



We respectfully request an examination of our **ILLUSTRATED CATALOGUE** herewith presented, and solicit your special notice to our **NEW PATTERNS of COOKING AND HEATING STOVES.**

Having large manufacturing facilities at our command, it will be our endeavor to always have a full assortment of goods on hand, so that purchasers may rely upon having their orders filled with immediate dispatch.

Particular attention will be given to **PACKING GOODS** in **SHIPPING ORDER** and **OBTAINING FREIGHTS** at **LOW FIGURES.** We shall be pleased to furnish you with **PRICE LISTS** on application, and would solicit attention to our **PATTERNS, PRICES** and **TERMS,** and hope to receive your orders.

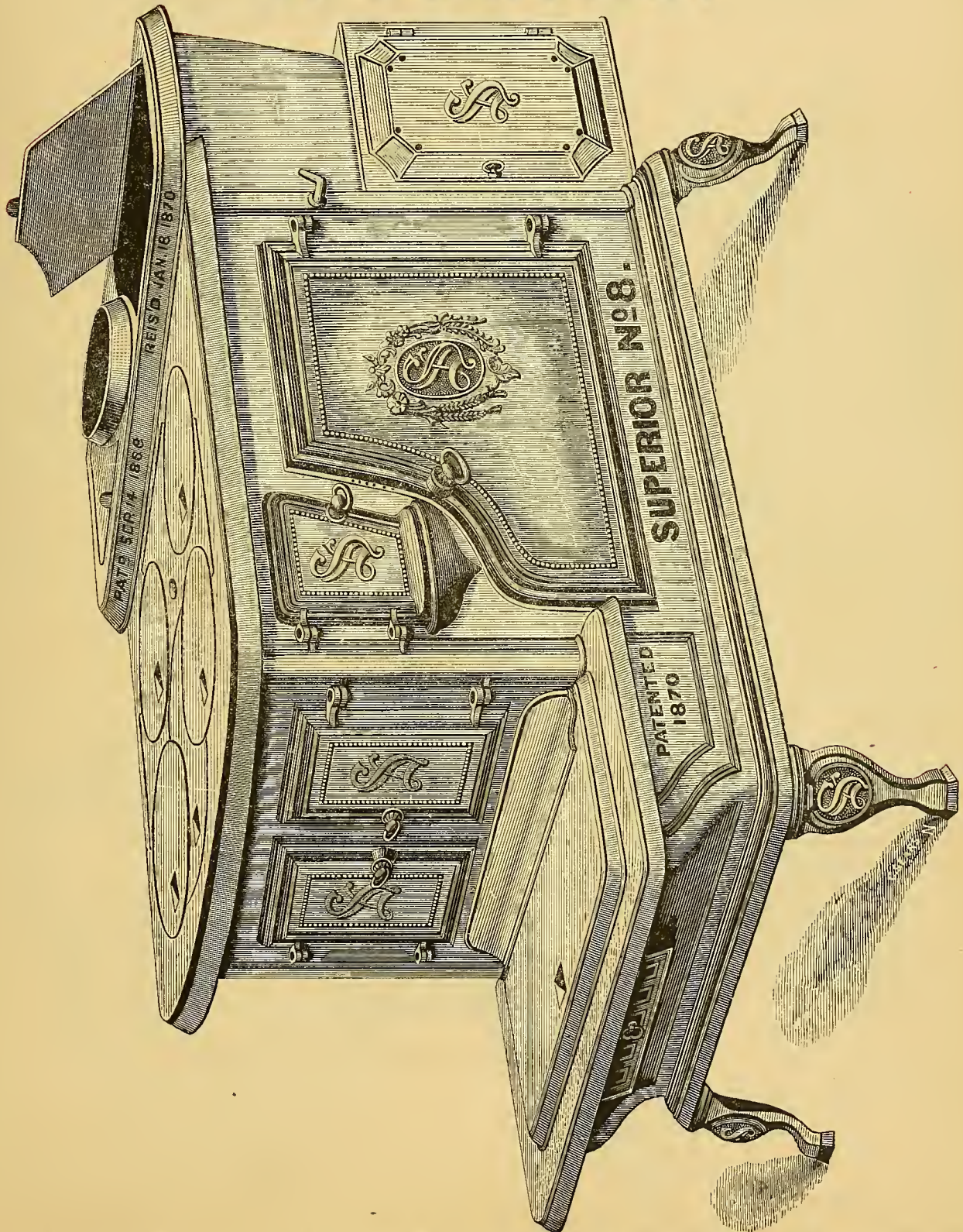
JORDAN L. MOTT,

TREASURER.

The J. L. Mott Iron Works.

5

SUPERIOR.

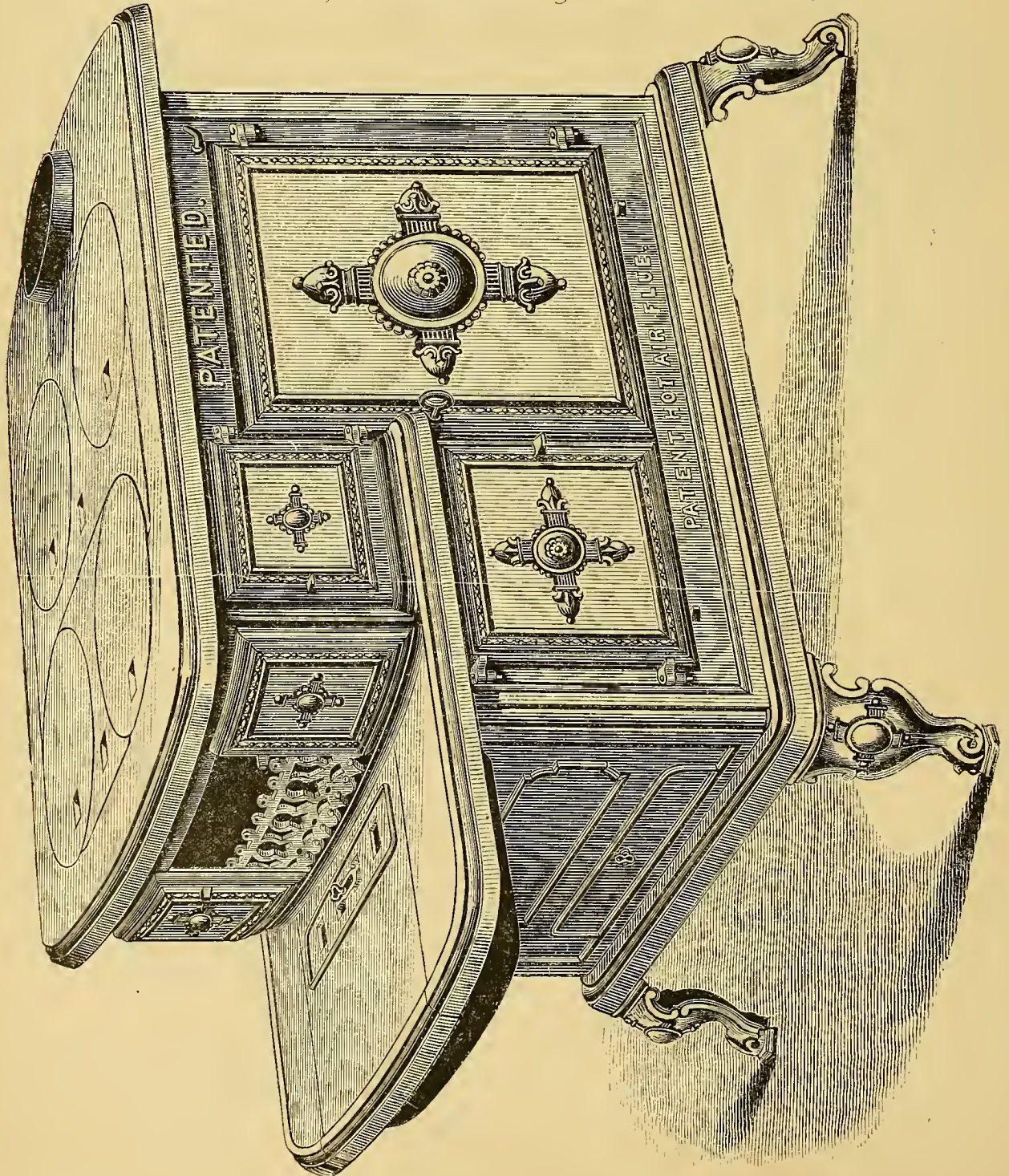


A strictly first class New Pattern Cook Stove, for Coal or Wood, new style back oven flues, arranged in such a manner that all the heat is retained in the Oven. Hot Blast Draft, Patent Reservoir; will boil eight to ten gallons water in one hour. All sizes plain and with Reservoirs and Russia Iron Warming Closets, with Cast Iron Doors. Sizes, 8, 8½, 9 and 10 inches.

The J. L. Mott Iron Works.

SOUTHERN HOME.

FOR WOOD, WITH PLAIN & EXTENSION TOP.



FOUR SIZES, 6, 7, 8 & 9 INCH.

DESCRIPTION OF
SOUTHERN HOME.

SIZES OF SOUTHERN HOME,

6, 7, 8 and 9 INCH.

IN making the patterns of the SOUTHERN HOME, our design and intention was to make a Stove most acceptable to the public, combine all merited improvements, be durable and operate perfectly, doing greatest amount of work with smallest consumption of fuel. We feel satisfied that our desire has been fully accomplished, and we offer the SOUTHERN HOME COOKING STOVE, confident of its merited superiority.

THE FIRE BOX

is of sufficient capacity to insure perfect operation with economy of fuel. *Heavy Cross-Bars* are cast on the bottom of the fire-box, combining *utility* and *durability*.

THE OVEN

is of unusual size, very high under the fire box. By a most novel arrangement, the part of the oven directly under the fire box is protected from the strong heat of the fire in this particular place, and a uniform heat is obtained, precisely the same in all parts of the oven. This secures that most desirable thing in any Stove, even baking and roasting.

THE VENTILATING HOT-AIR FLUE

is, beyond a doubt, the most valuable and satisfactory improvement made in Cooking Stoves for many years.

Directly under the hearth of the Stove we have cast holes, through which cold air is admitted into the oven; the air passes out of the oven by means of holes cast in back oven plate, insuring *perfect ventilation*, and carrying off the moisture that would otherwise be absorbed, to great detriment of articles being cooked.

THE FLUES are very large and easily cleaned.

THE CROSS-PIECES

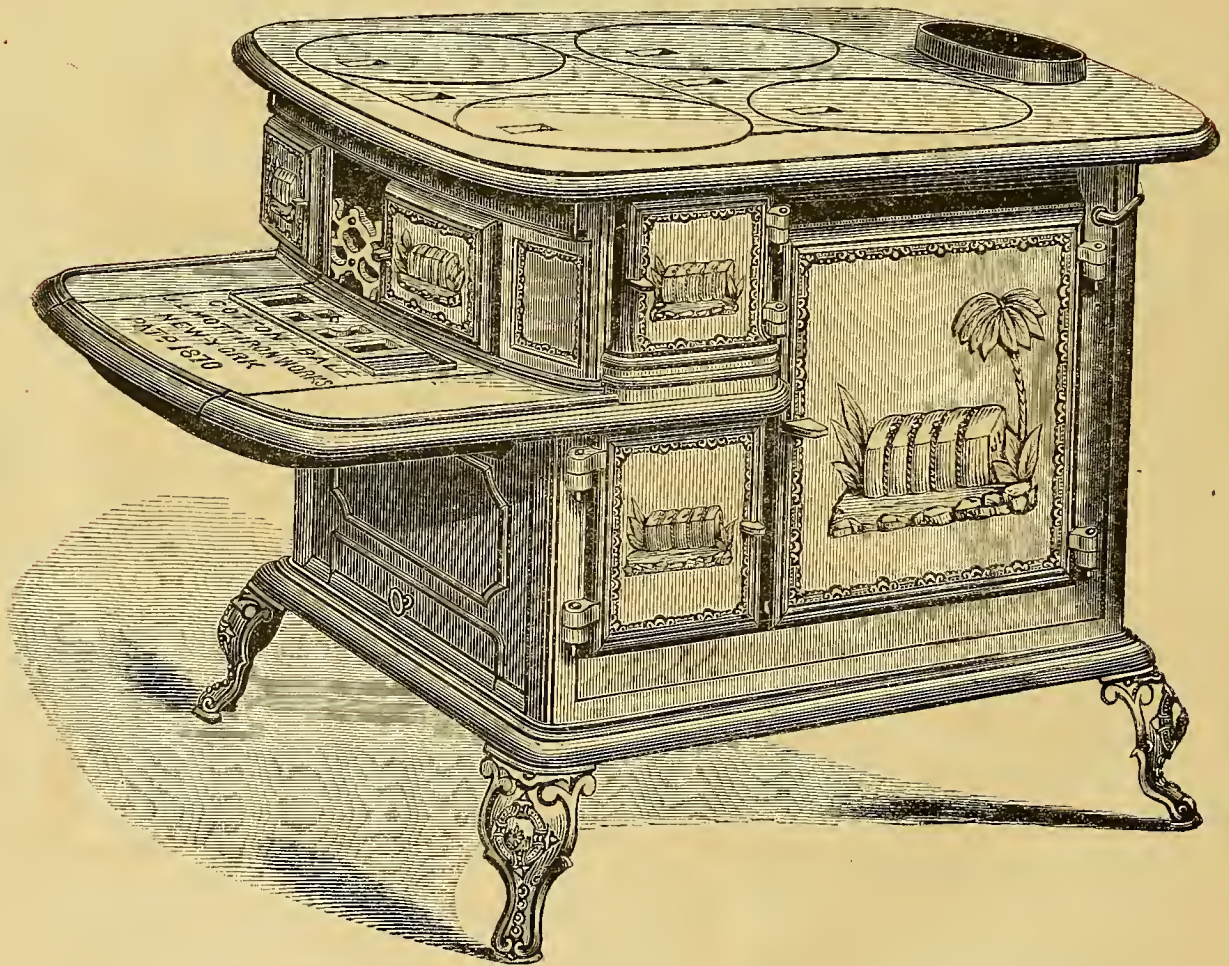
are made *extra heavy*, and are lined with *heavy cast iron lining*, ensuring durability.

The SOUTHERN HOME is what we intended it should be, a *first-rate Stove*, a *quick baker* and *fuel saver*. We have two patterns of cast iron reservoirs, which we attach to these Stoves; one, the old fashioned reservoir on top, and the other hung low on back of Stove, either of which heats water satisfactorily.

The J. L. Mott Iron Works.

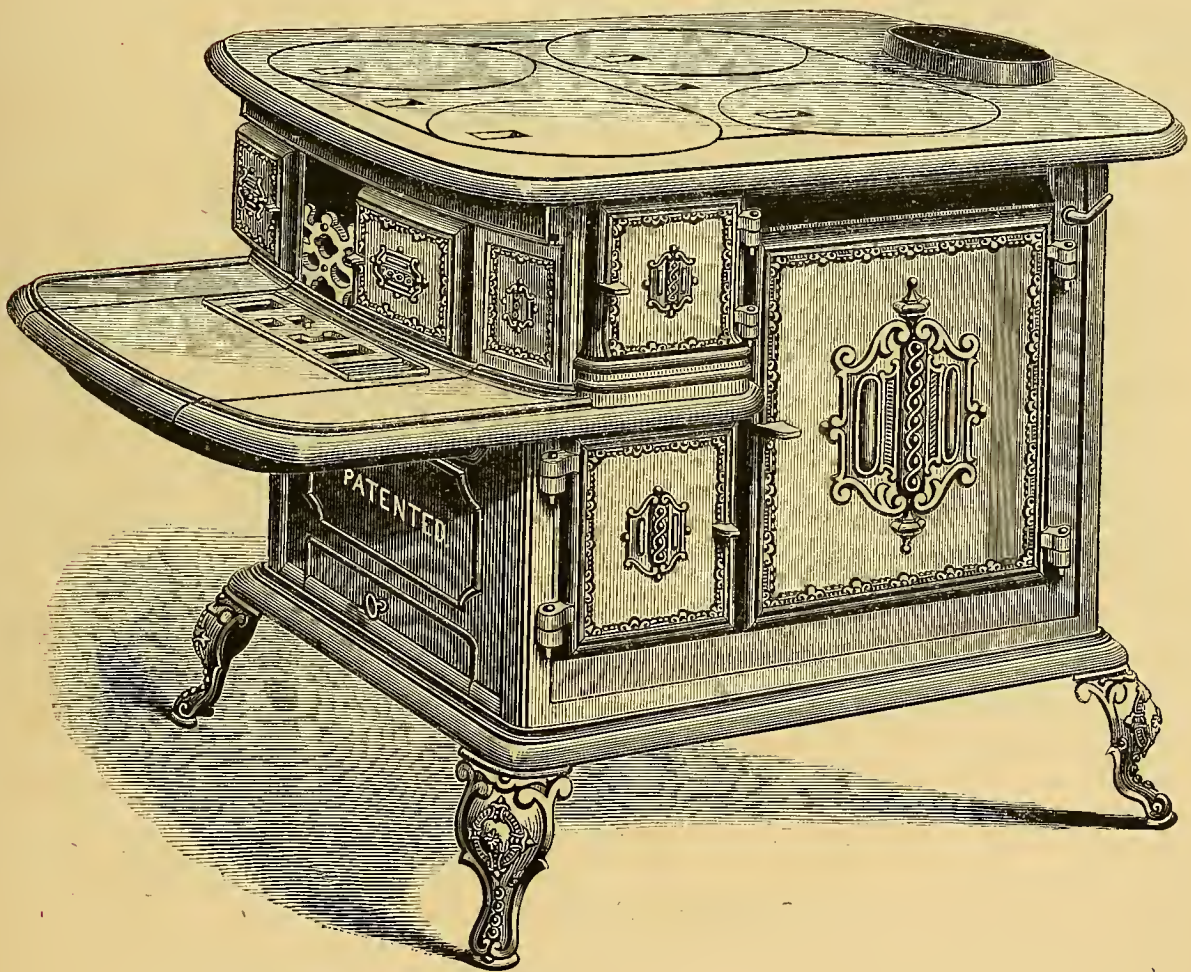
COTTON BALE.

FOR WOOD, 7, 8 and 9 INCH.



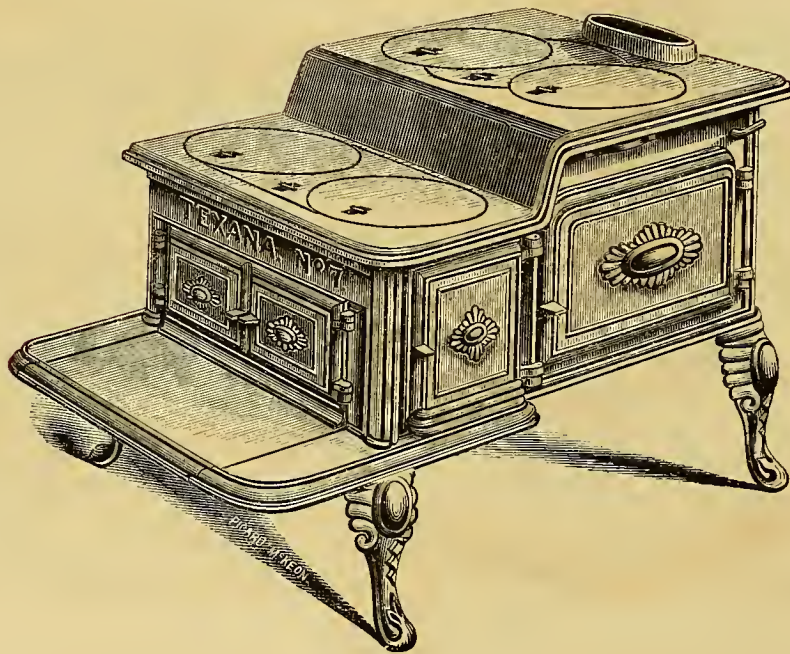
A low price Stove, within the means of all, and of very neat design. Perfect in operation.

SEMINOLE.



FOR WOOD—7, 8 & 9 INCH.

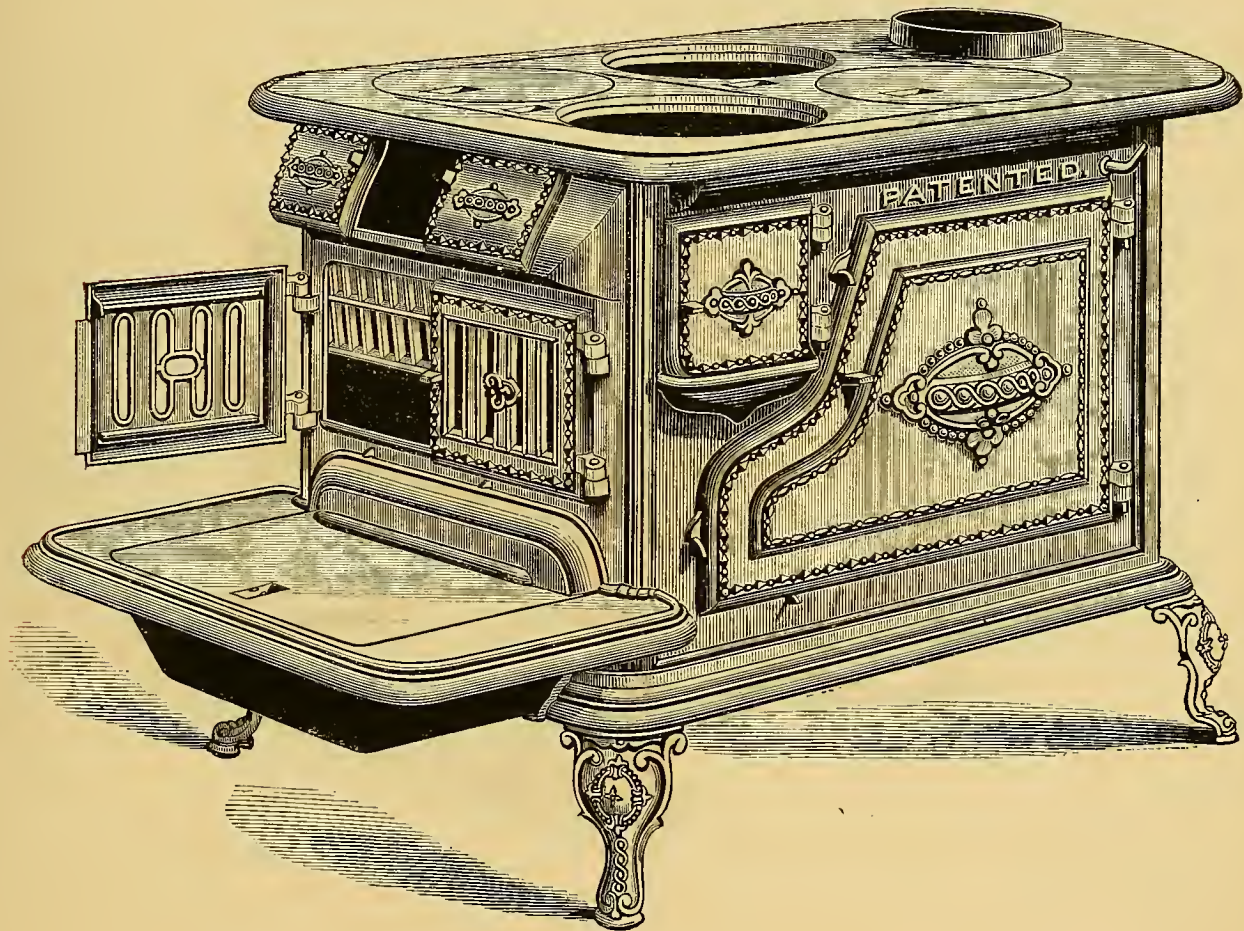
Beautiful Design. Low Prices.

MARION.

FOR WOOD—6, 7, 8 & 9 INCH.

A handsome Premium Stove, quick operator, low price, and finds ready sale.

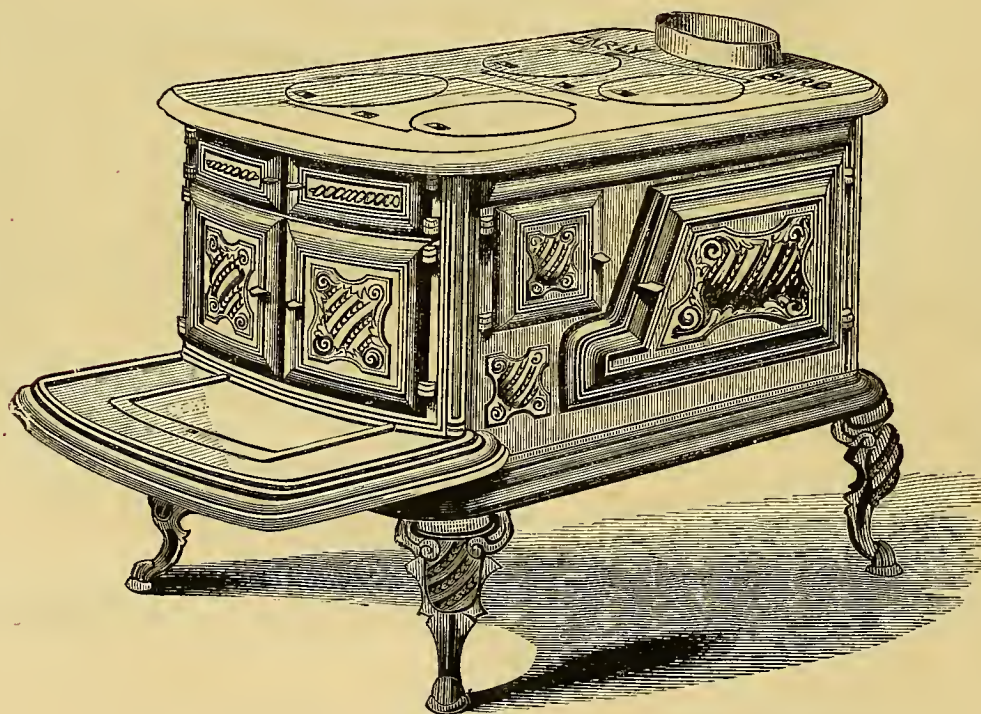
DEMAND.



FOR WOOD OR COAL—5 1-2, 6, 6 1-2, 7 & 8 INCH.

A new pattern Stove of plain and neat design, large oven capacity, will operate equally well with coal or wood.

The very Stove that will be in *Demand* by the million.

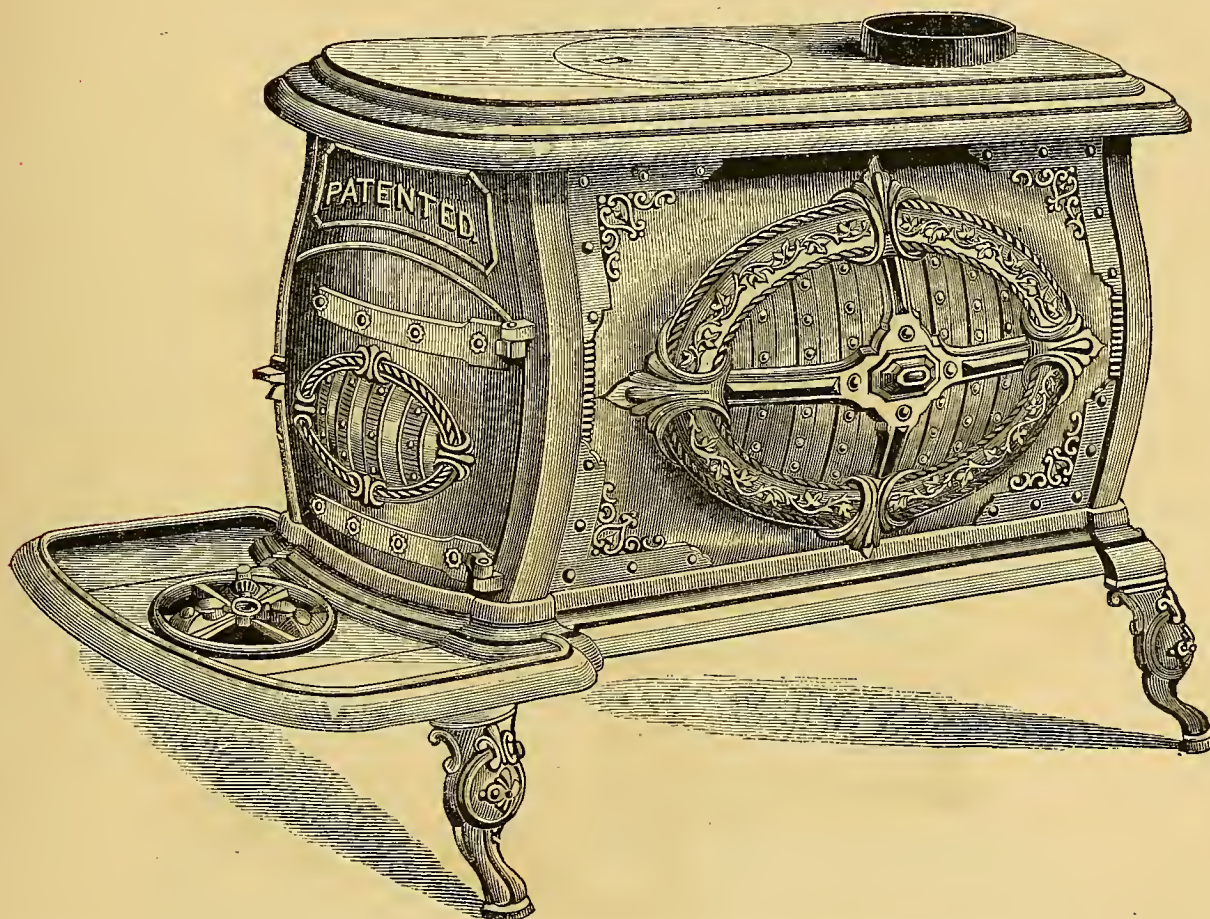
EARLY BIRD.

FOR COAL—6, 7 & 8 INCH.

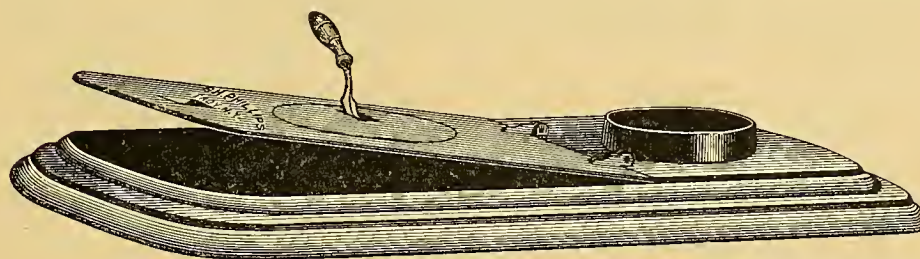
This Stove has had a very extensive sale the last five years, has a detached Hearth, and the Castings are very heavy.

PINE KNOT.

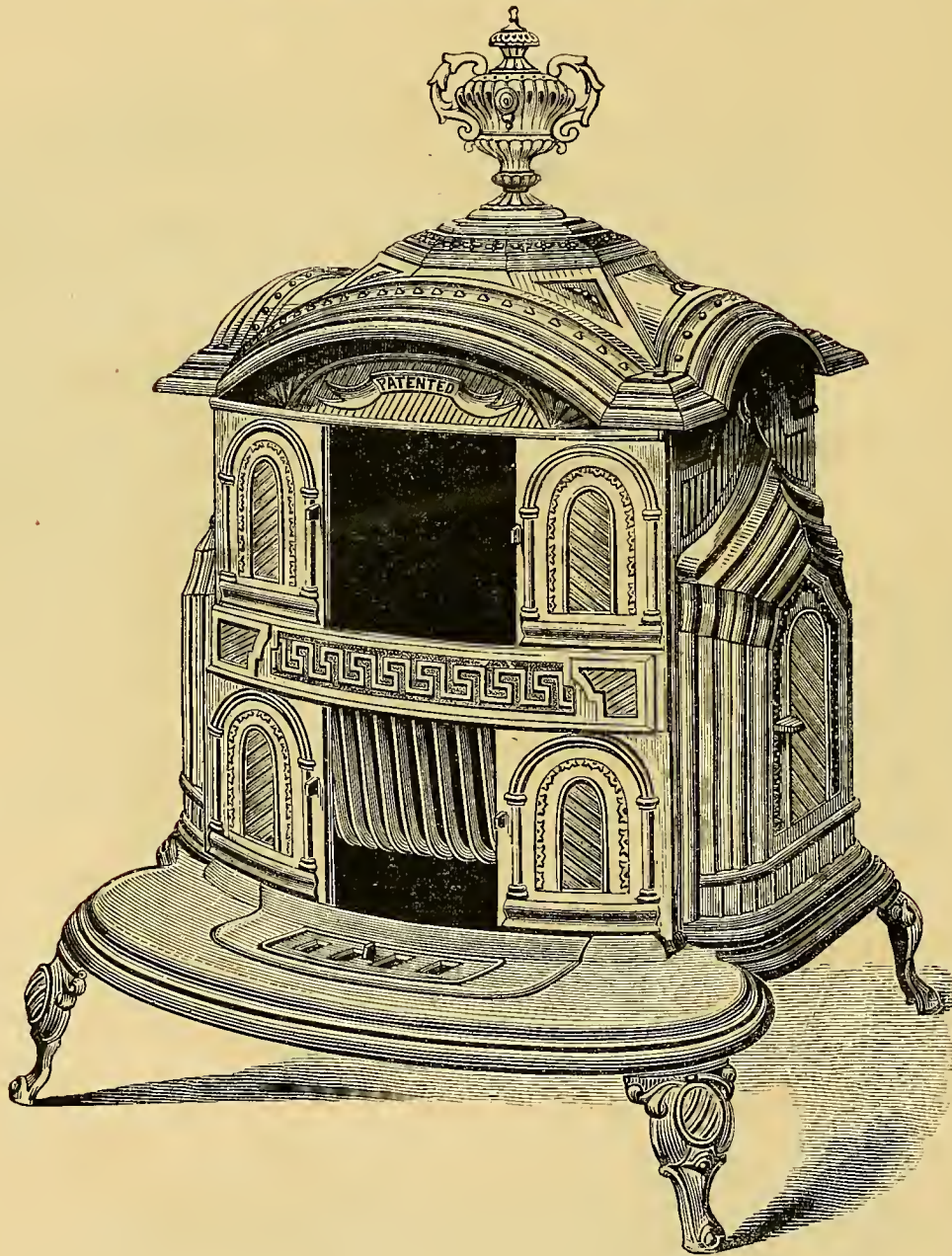
16, 18, 22, 28 & 36 INCHES.



New Pattern, Large Door, Castings smooth and well mounted. These sizes designate the length of Fire Box.



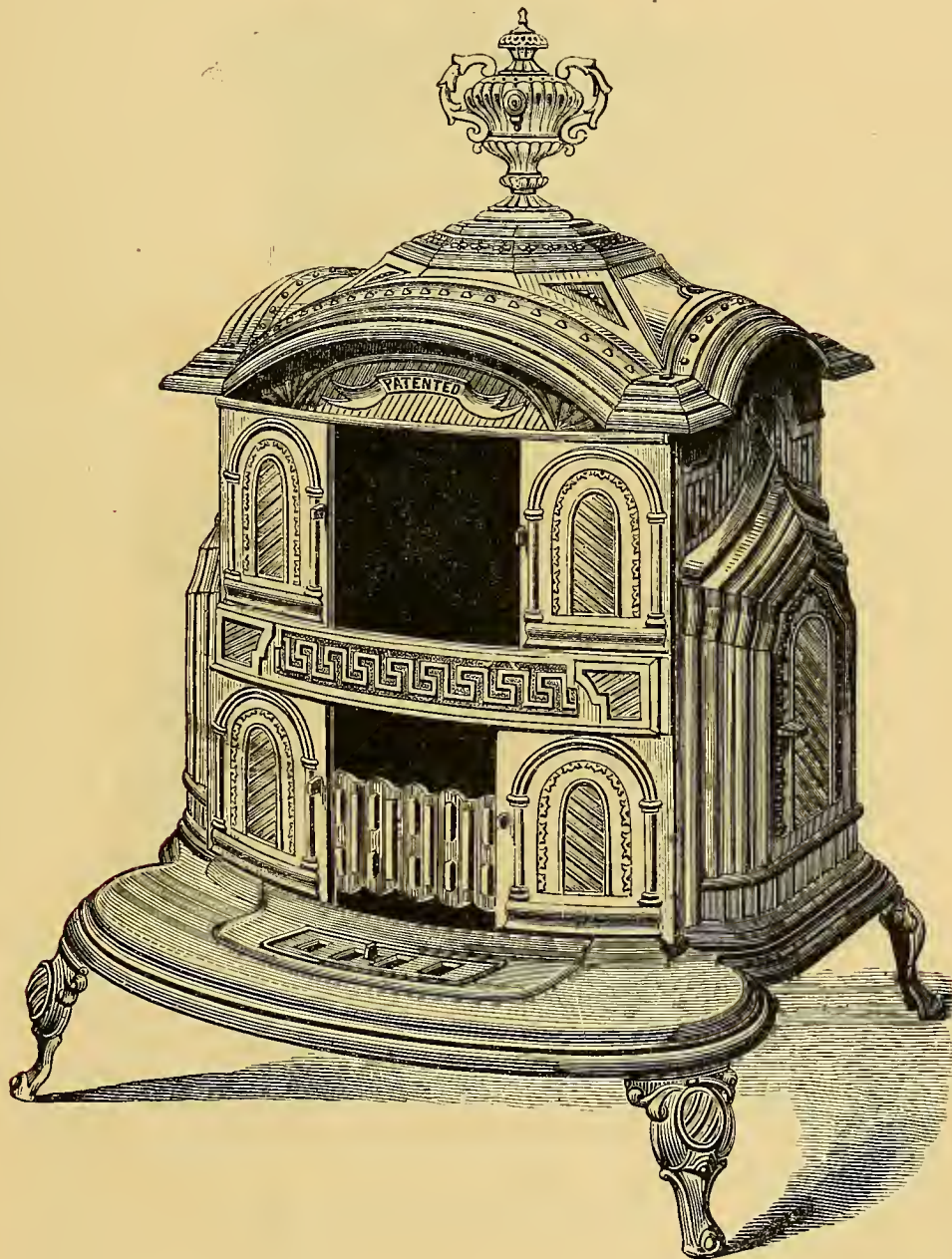
We also make these Stoves with open top as per sectional cut.

RANGER.

FOR COAL—Nos. 18, 20, 22 & 25.

New pattern, heavy castings and well put together.

RANGER.



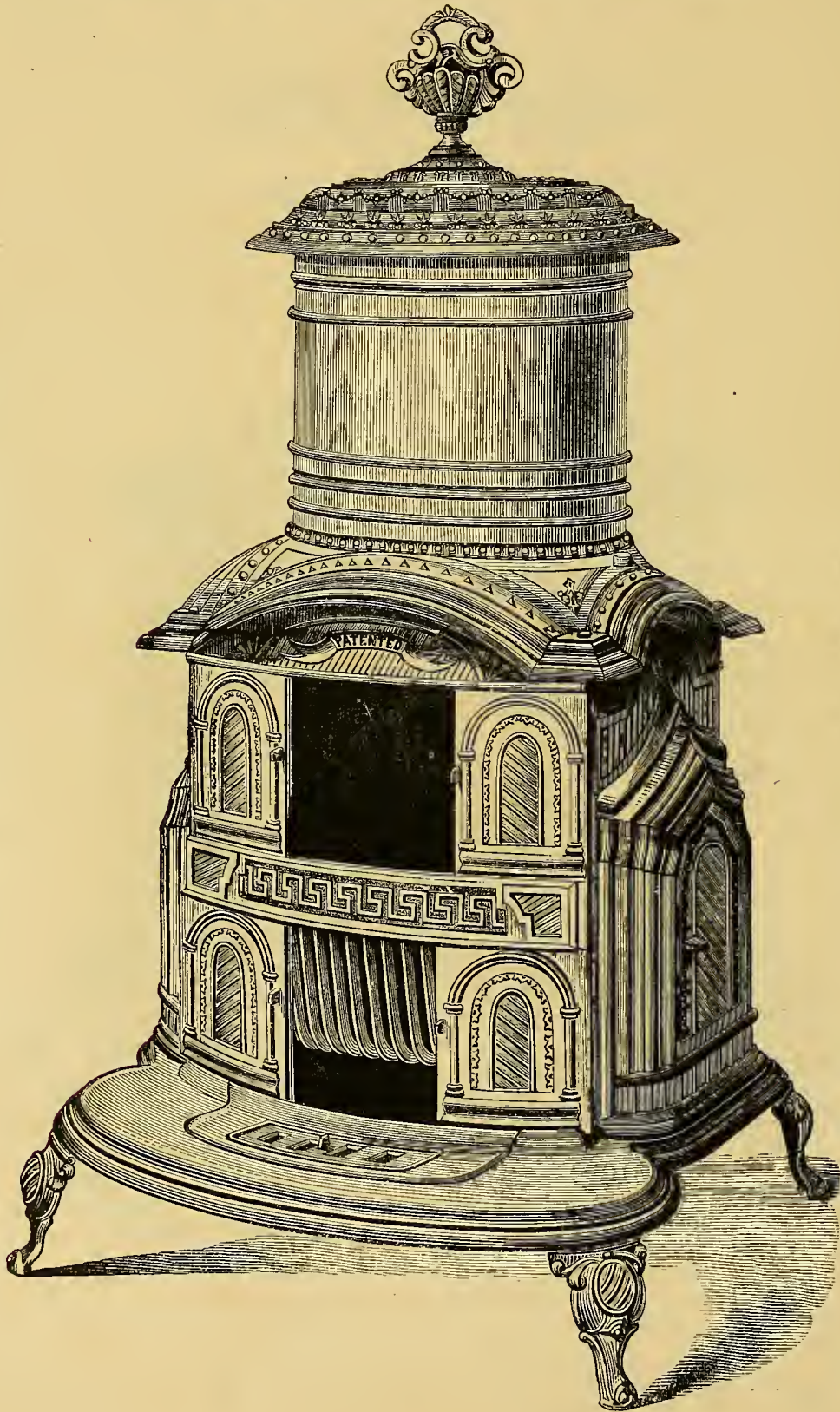
FOR WOOD -Nos. 18, 20, 22 & 25.

These sizes designate the length of Fire Box. New pattern, heavy castings and well put together.

The J. L. Mott Iron Works.

RANGER.

FOR COAL, WITH RUSSIA IRON TOP.

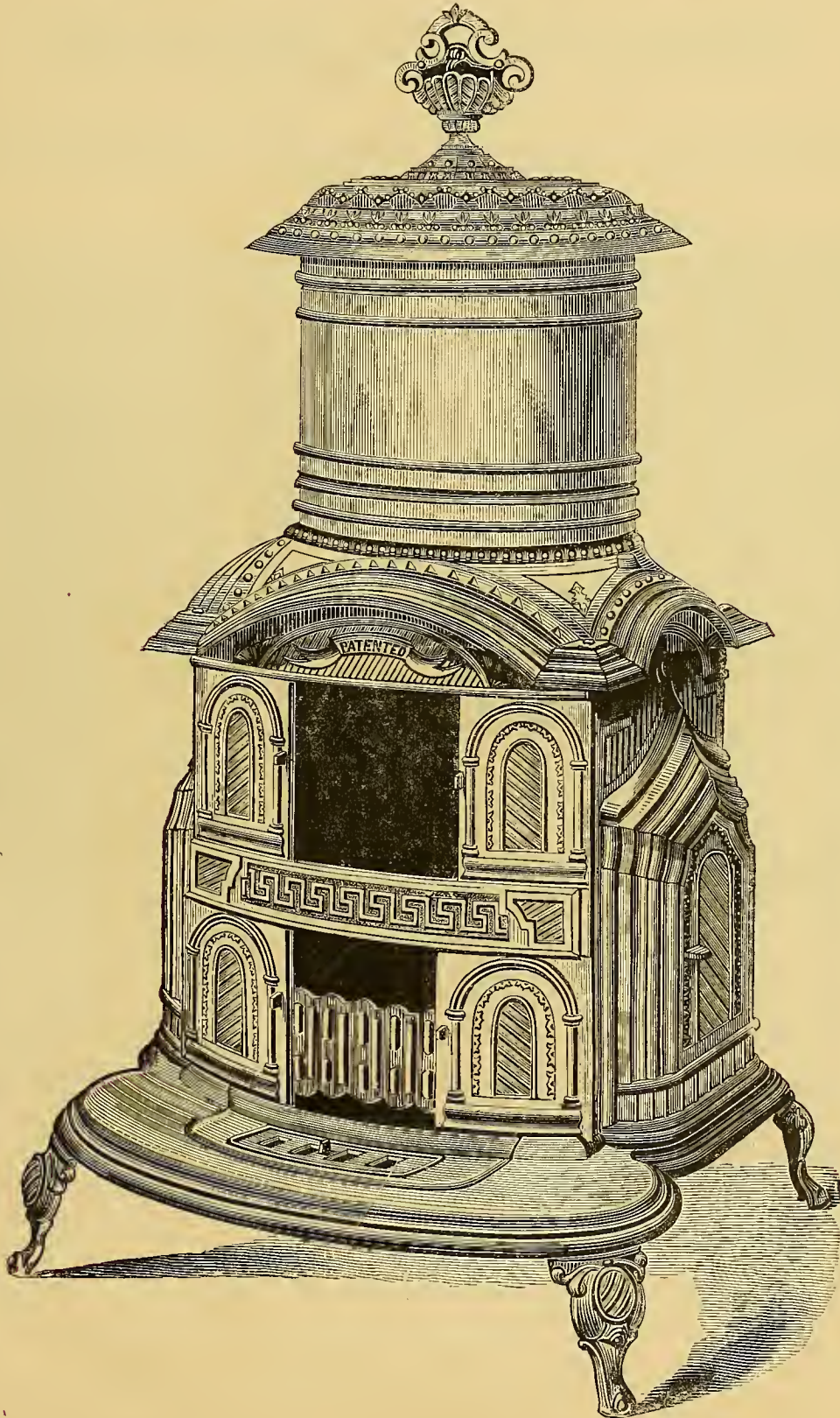


Nos. 18, 20, 22 & 25.

New pattern, heavy castings and well put together.

RANGER.

FOR WOOD, WITH RUSSIA IRON TOP.

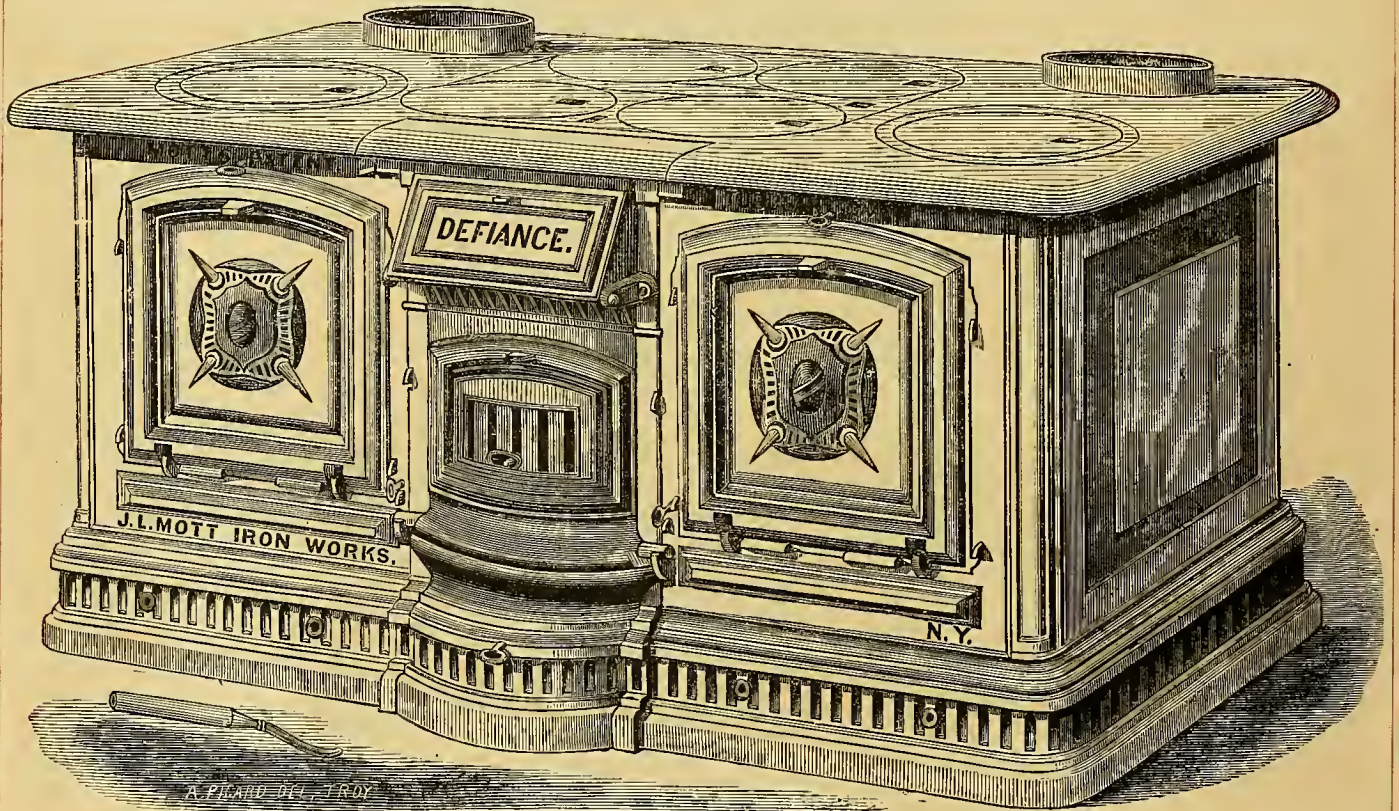


Nos. 18, 20, 22 & 25.

The sizes designate the length of Fire Box. New pattern, heavy castings and well put together.

DEFIANCE RANGE.

FOR COAL OR WOOD, WITH OR WITHOUT WATER BACK.



This Range is now introduced to the Trade in the full confidence of its great superiority over all others! It has been our aim, in the construction of the DEFIANCE, to attain the highest perfection in the culinary department.

Parties in the trade generally concede it the best Range in the market, and all who have them in use are enthusiastic in their praise. We will here remark that all the distinctive features of our Invincible Range have been preserved in the DEFIANCE, with many important improvements added.

We do not deem it necessary to enter into a laudation of all its merits, but will simply and briefly enumerate some of the advantages it possesses over other Ranges. The Ovens are large and constructed with MOTT'S PATENT SHEET-IRON TUBES, so long and favorably known as the best of Bakers. The Water Back has a flue underneath and behind it, so that, with even a *very small fire*, an abundance of hot water is obtained.

In raking out the fire, instead of the room being filled with dust and ashes, as with the common class of Ranges, in the DEFIANCE it is all carried off in the smoke pipe.

Castings extra heavy, and *every joint tightly cemented*, which, with the relative proportions of Ovens and fire chamber so nicely and accurately arranged, that baking and general cooking are accomplished with dispatch, and with considerably less fuel than any Range that we are acquainted with. In fact, full benefit is obtained from the coal consumed.

Any number of testimonials could be furnished, but we do not think it necessary; the great success of our INVINCIBLE RANGE we deem a sufficient guarantee for the DEFIANCE.

May be set in a fire-place, with or without masonry, or can be placed out in the room as an ordinary Stove.

FIVE SIZES—ADAPTED TO FAMILIES AND HOTELS.

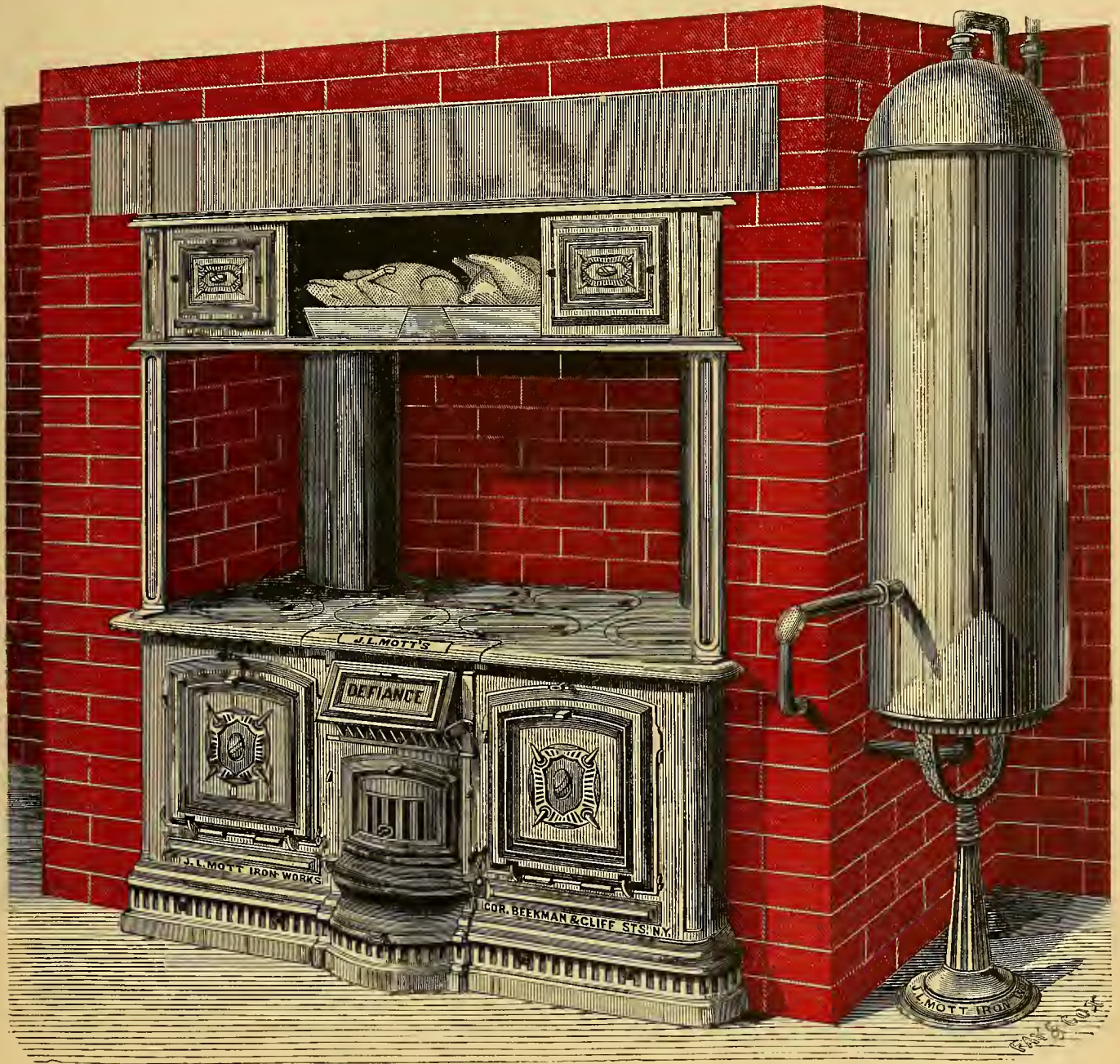
Price Lists sent per Mail on application.

No. 1,	- - -	3 feet long, six 7 inch Boiler Holes.
" 7,	- - -	3 feet 6 inches long, four 7 inch and two 9 inch Boiler Holes.
" 8,	- - -	3 feet 10 inches long, four 8 inch and two 10 inch Boiler Holes.
" 9,	- - -	4 feet 2 inches long, six 9 inch Boiler Holes.
" 10,	- - -	5 feet 6 inches long, six 10 inch and two 7 inch Boiler Holes.

(Contracting Ring for large Holes.)

WE ATTACH WARMING CLOSETS TO THE NOS. 7, 8, 9 AND 10, IF DESIRED.

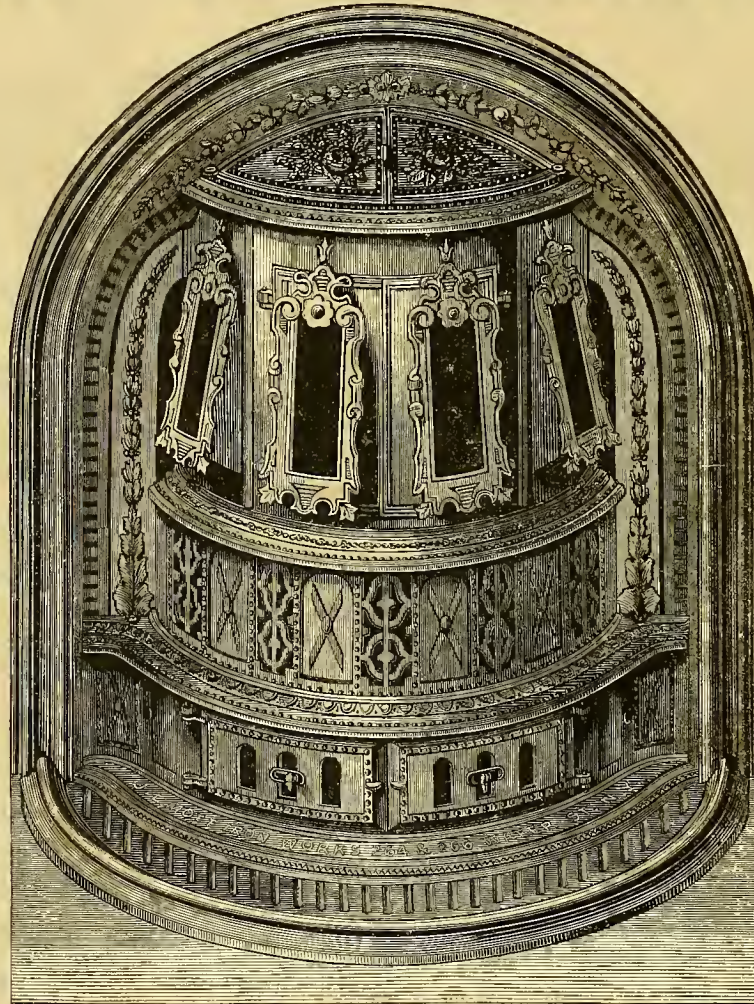
MOTT'S DEFIANCE KITCHEN RANGES.



WITH PATENT TUBULAR OVENS.

The above engraving shows the Defiance Range with Warming Closet attached.

MOTT'S DEFIANCE FIRE PLACE HEATER.



AFTER two years' experience in testing and perfecting the DEFIANCE FIRE-PLACE HEATER, we now formally introduce it to the public, and, in doing so, we do not propose to adopt the method used by some other manufacturers, of enumerating special faults of other Heaters, while at the same time they extol their own in high sounding phrases and words, all of which the public know or care little about.

A Fire-place heater is designed to warm the room in which it sets, in the same manner as by any other stove, but, as one-half the Heater is closed up in the fire place, the part projecting into the room must have as much heating capacity as the whole of an ordinary stove. The DEFIANCE is constructed with a view to meet this difficulty, being provided with Radiators to turn the heat into the room, which would otherwise (as with most other fire-place Heaters) pass off direct to the chimney.

It will be seen by reference to cut on next page, showing the part which sets in the fire-place and heats the air as it passes to the upper rooms, that a large area of heating surface is provided; in fact, all that it is possible to get in so small a space as an ordinary dining-room fire-place.

This large surface is so arranged, in connection with the fire-chamber, as to become excessively HOT (we say HOT, because WARM IRON will not heat COLD AIR), which is absolutely necessary to HEAT the FRESH COLD AIR which every fire-place Heater should be supplied with, either from out-doors or from the cellar, instead of depending on the vitiated warm air around the base of room where the Heater sets. All Heaters set by ourselves are supplied with cold air as above stated.

The DEFIANCE is the only Heater we know of with sufficient heating capacity to warrant the introduction of cold air.

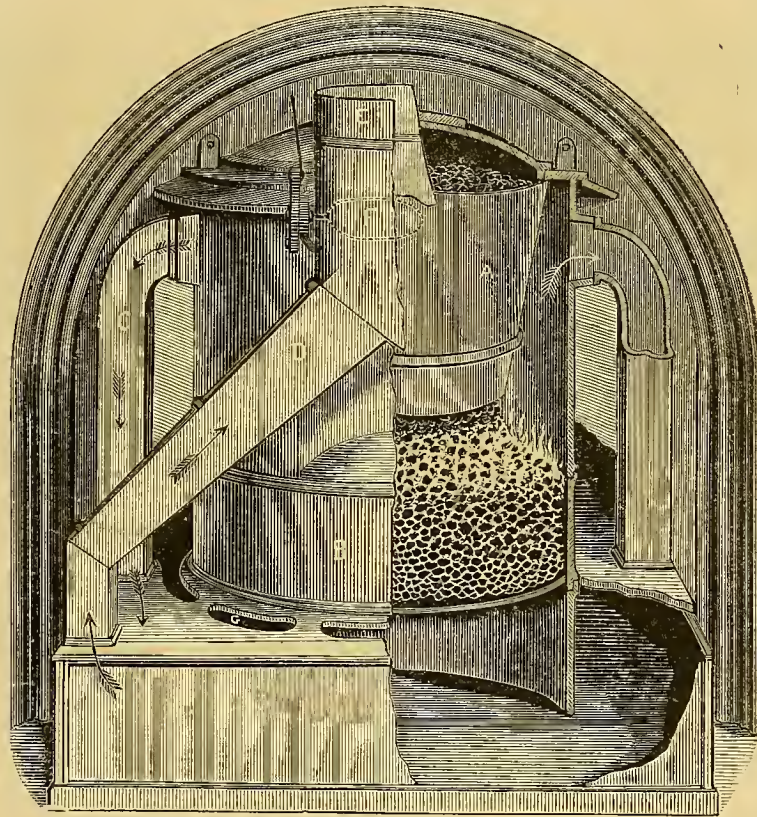
In conclusion, suffice it to say that the DEFIANCE is a better Heater than many others in the market, and quite as good as any we are at present acquainted with.

Every Heater set by ourselves warranted to give entire satisfaction.

SECTIONAL VIEW OF

MOTT'S

DEFIANCE FIRE-PLACE HEATER



*Showing the part with radiating surface, which sets inside the Fire-place,
and heats the Air as it passes to the upper Rooms.*

EXPLANATION.

A.—FEEDER.

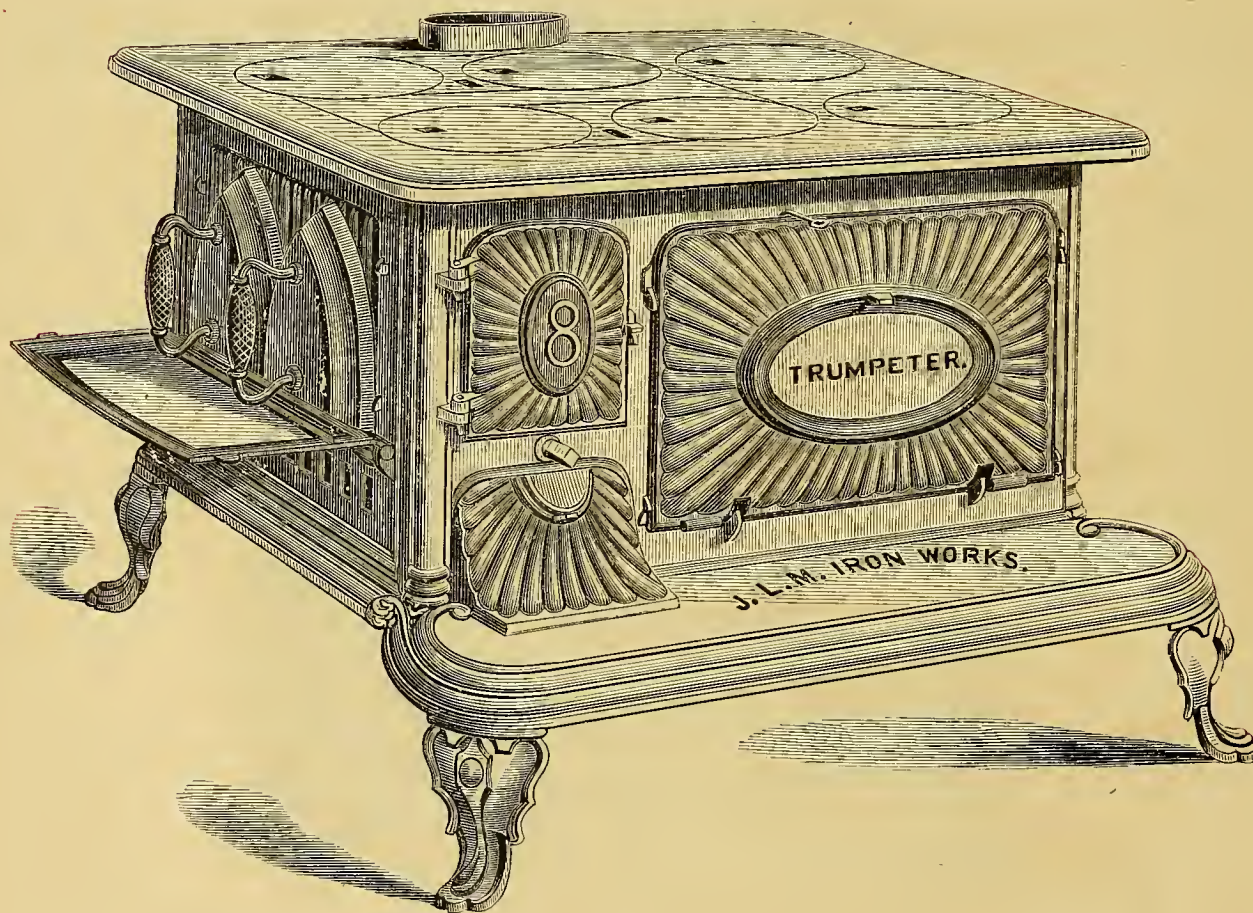
B.—FIRE BOX.

C.—DESCENDING FLUE.

D.—ASCENDING FLUE.

E.—SMOKE PIPE COLLAR.

F.—DIRECT DRAFT DAMPER.

TRUMPETER.*WITH SAD IRONS.**FOR WOOD OR COAL, 6, 7, 8 and 9 INCH.*

The most perfect portable Cooking Apparatus in market, adapted to Family use, Restaurants, Hotels and Boarding Houses. Can be set in fire-place, or placed out in the room. The top of the Stove has six Boiler Holes, which, by a simple arrangement of the damper, are all made to boil at once, an equal distribution of heat being diffused under all the Boilers, and insures economical combustion. It will be seen by the above cut, that this Stove has an open grate and drop door on the outside of fire-chamber, which may be used either for heating sad irons, broiling or roasting meats in a tin oven, while at the same time, on the top of Stove may be placed a wash boiler and four cooking vessels, and from six to eight loaves of bread can be baked in the oven.

We will here remark, that one of the principal objections to Stoves of this kind heretofore made is the shallow Oven which we have obviated, by making it from two to three inches higher than other Stoves of this description.

This range is admirably adapted to set in small houses as a permanent fixture and will cost much less than the ordinary Kitchen Range. We attach Water Backs to the 8 and 9 inch, capable of heating a forty-gallon Boiler.

TRUMPETER.

WITH FIXTURES & SADD IRONS, 6, 7, 8 & 9 INCH.

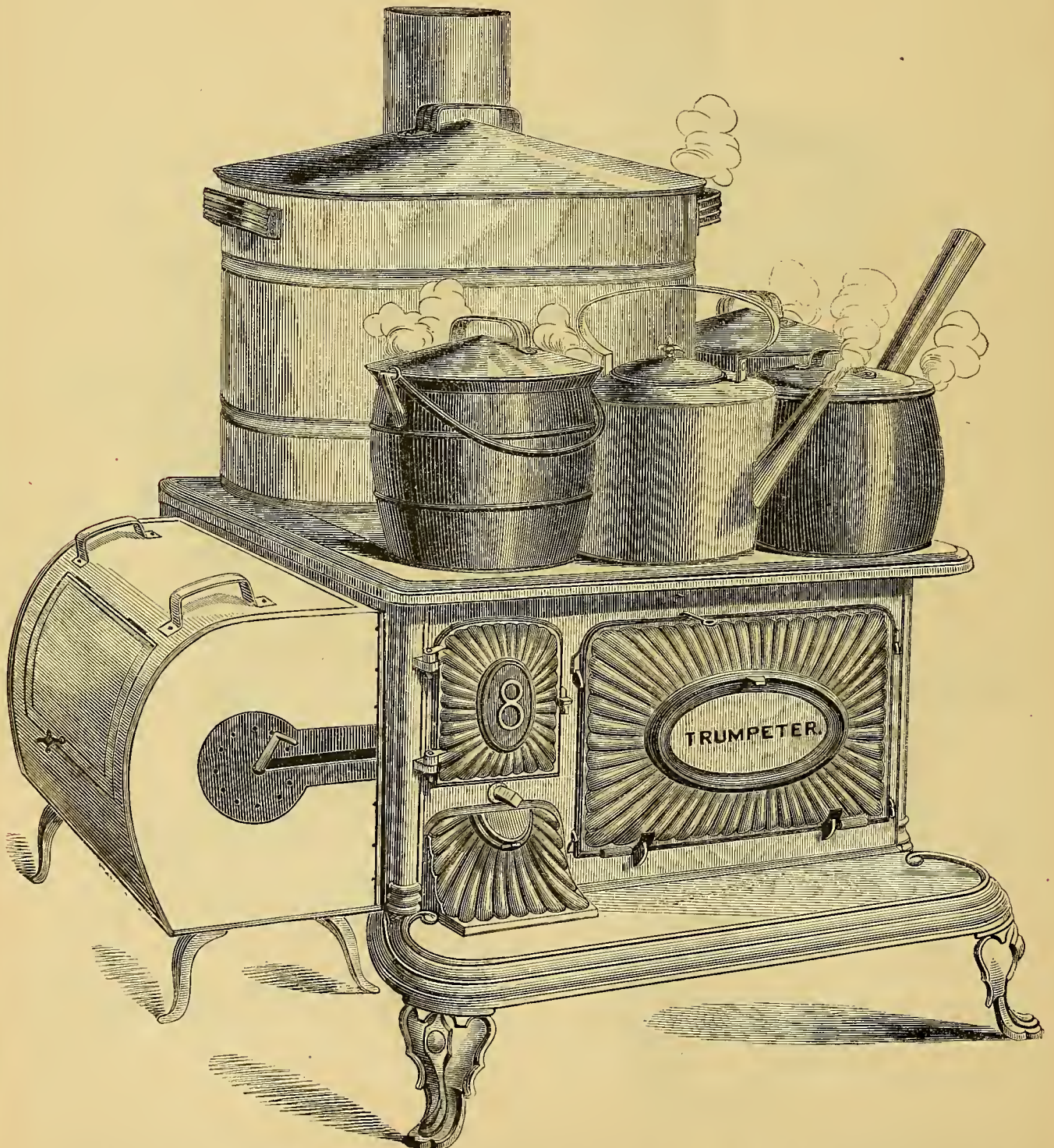


It is well known to almost every Housekeeper, that broiling over a fire, on a range placed in a room, is attended with many disagreeable objections; besides, it disarranges the whole routine of cooking, by having to remove the boilers, thereby admitting a large volume of cold air through the openings, which very often nearly extinguishes the fire. These objections are obviated in this Stove, by placing the Gridiron on the end, the smoke passing through the open Grate to the exit Pipe.

The J. L. Mott Iron Works.

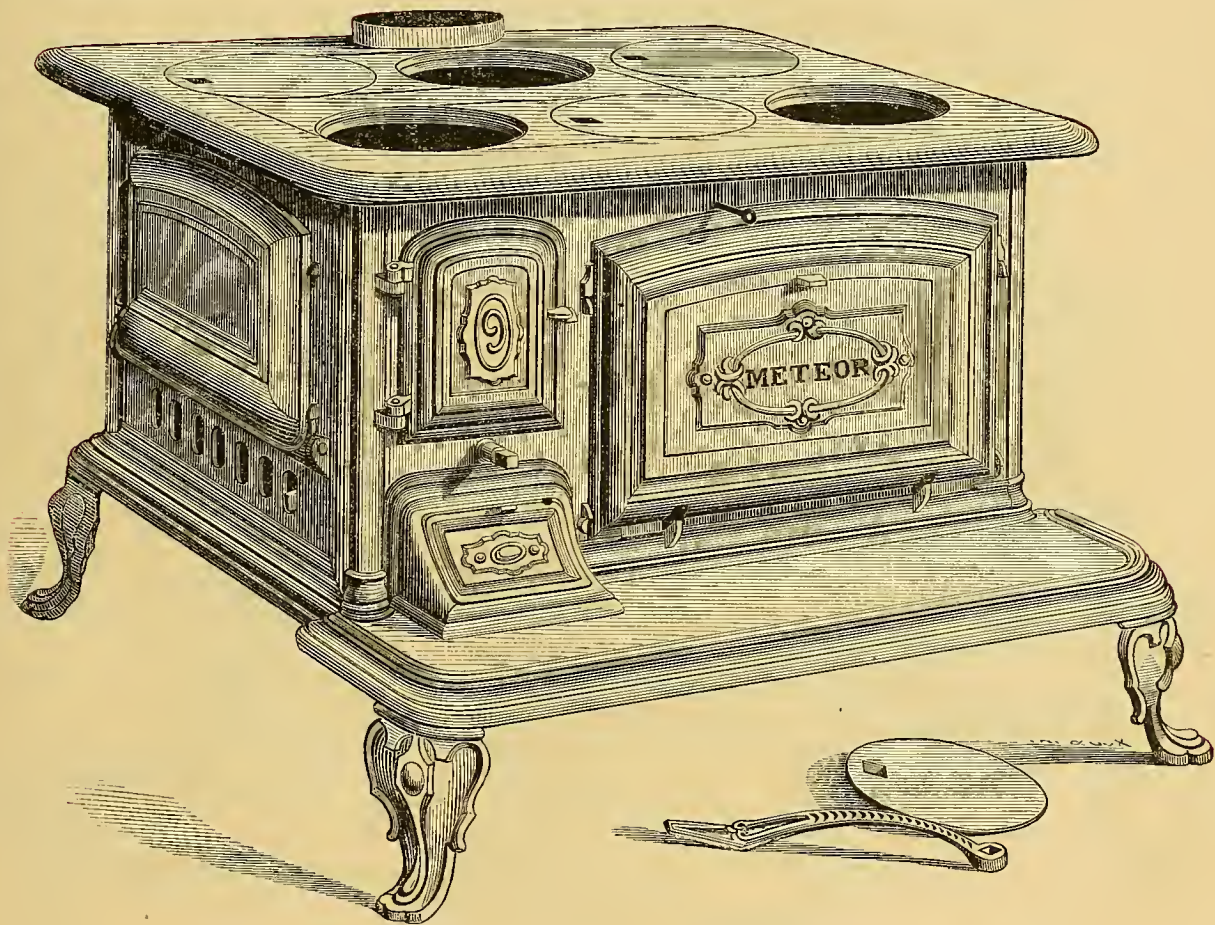
TRUMPETER.

WITH FIXTURES & ROASTER, 6, 7, 8 & 9 INCH.



The above cut shows that roasting meats before an open fire can be done in this Range, without retarding its operation or interfering with cooking. Boiling, Baking, and Roasting done with the same facility as either of the above branches alone.

METEOR.



A new and elegant first class Range, large Oven, and quick baker.

FOR WOOD OR COAL, 6, 7 & 8 INCH.

The J. L. Mott Iron Works.

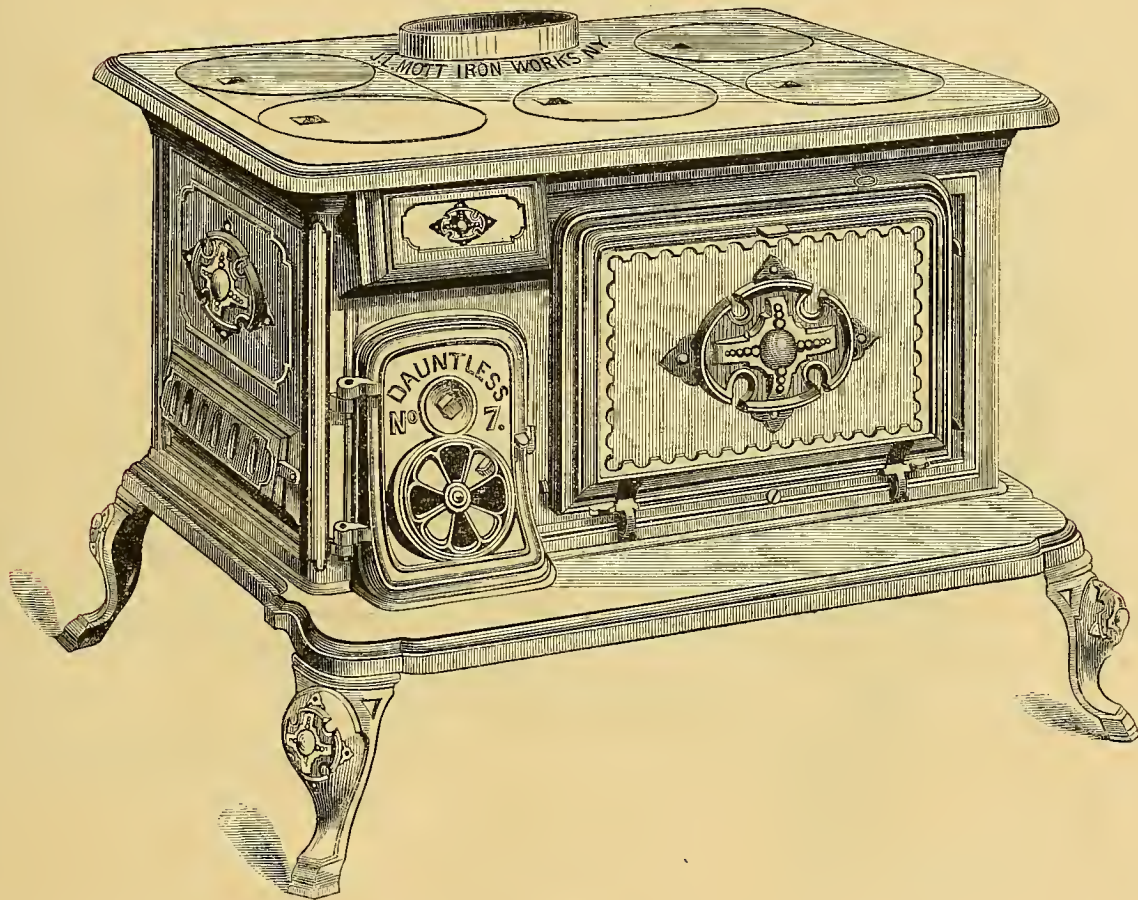
METEOR.



With Fixtures and Sad Irons.

FOR WOOD OR COAL, 6, 7 & 8 INCH.

DAUNTLESS RANGE.



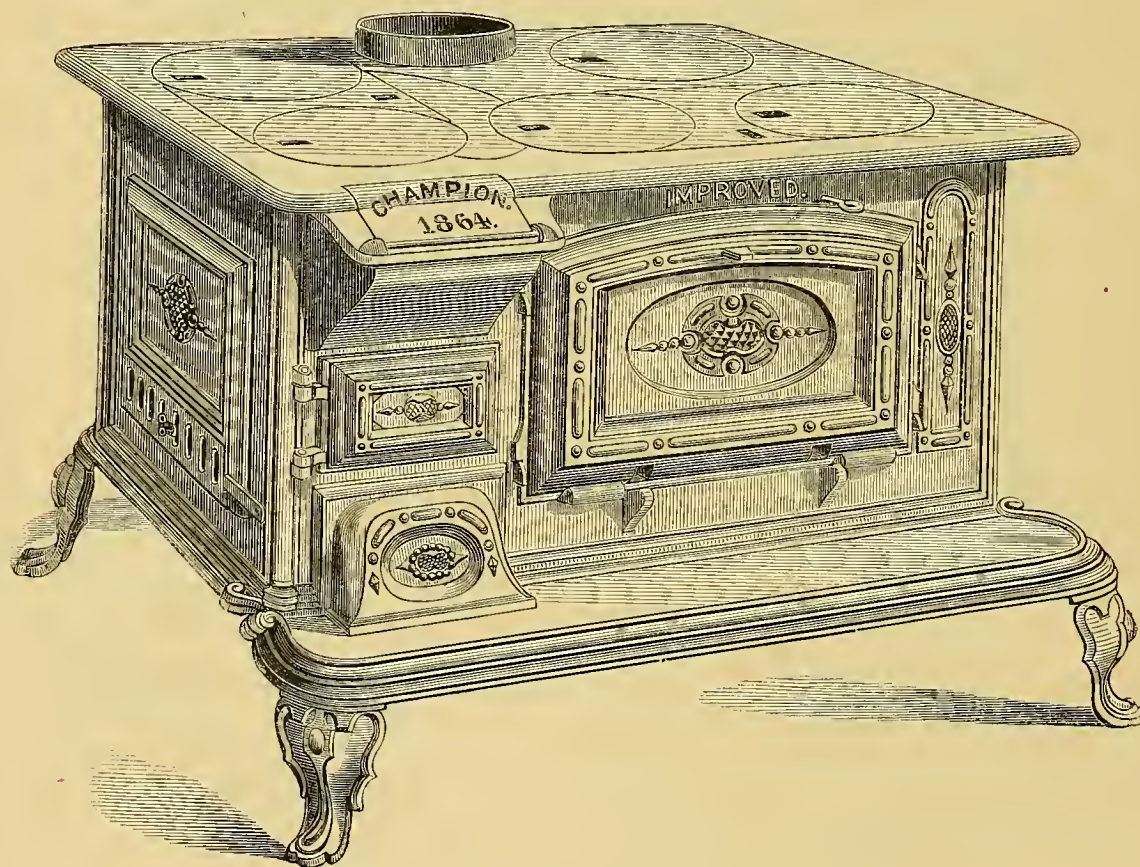
An entirely New Pattern for 1871, combining all the features required in a first-class Range for family use,—LOW PRICE.

6, 7, & 8 INCH.

The J. L. Mott Iron Works.

MOTT'S IMPROVED
CHAMPION RANGE.

FIVE HOLES.



FOR WOOD OR COAL, 6, 7 & 8 INCH.

WITH IMPROVED SLIDE DRAFT IN THE END TO FACILITATE KINDLING THE FIRE.

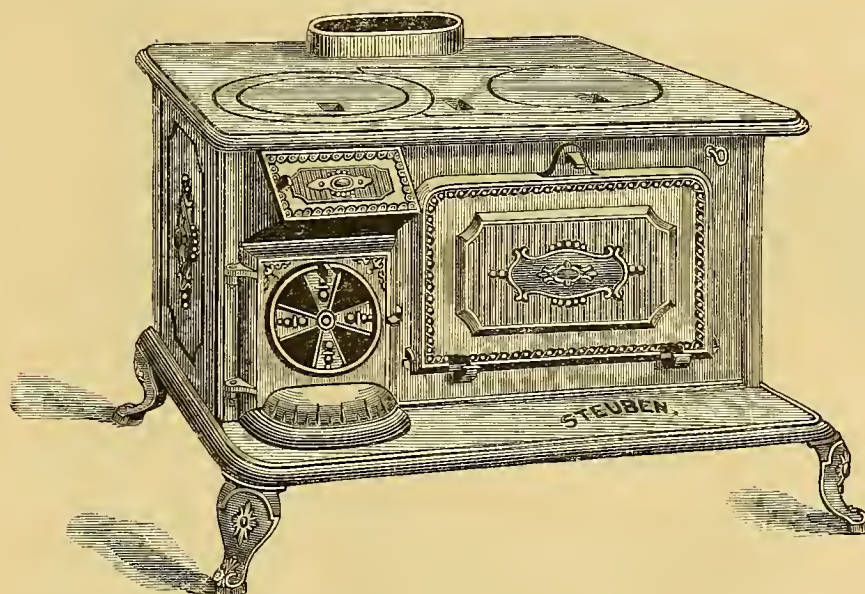
This Range was introduced to the trade in 1859, with increased sales every year since that time, which we think is a fair proof of its superiority.

The reputation of the Champion is well established; we have no knowledge of a single Range having failed to give entire satisfaction out of the large number sold during the past twelve years.

The ovens are large and castings heavy. The Flues are constructed in a manner to insure quick and even baking, without turning the dishes.

STEUBEN RANGE.

TWO HOLES.



6, 7, 8 and 9 INCH.

Entirely New Design and Low Price.

The J. L. Mott Iron Works.

PLEASANT PARLOR COOK.

FOR WOOD OR COAL, 7, 8 and 9 INCH.

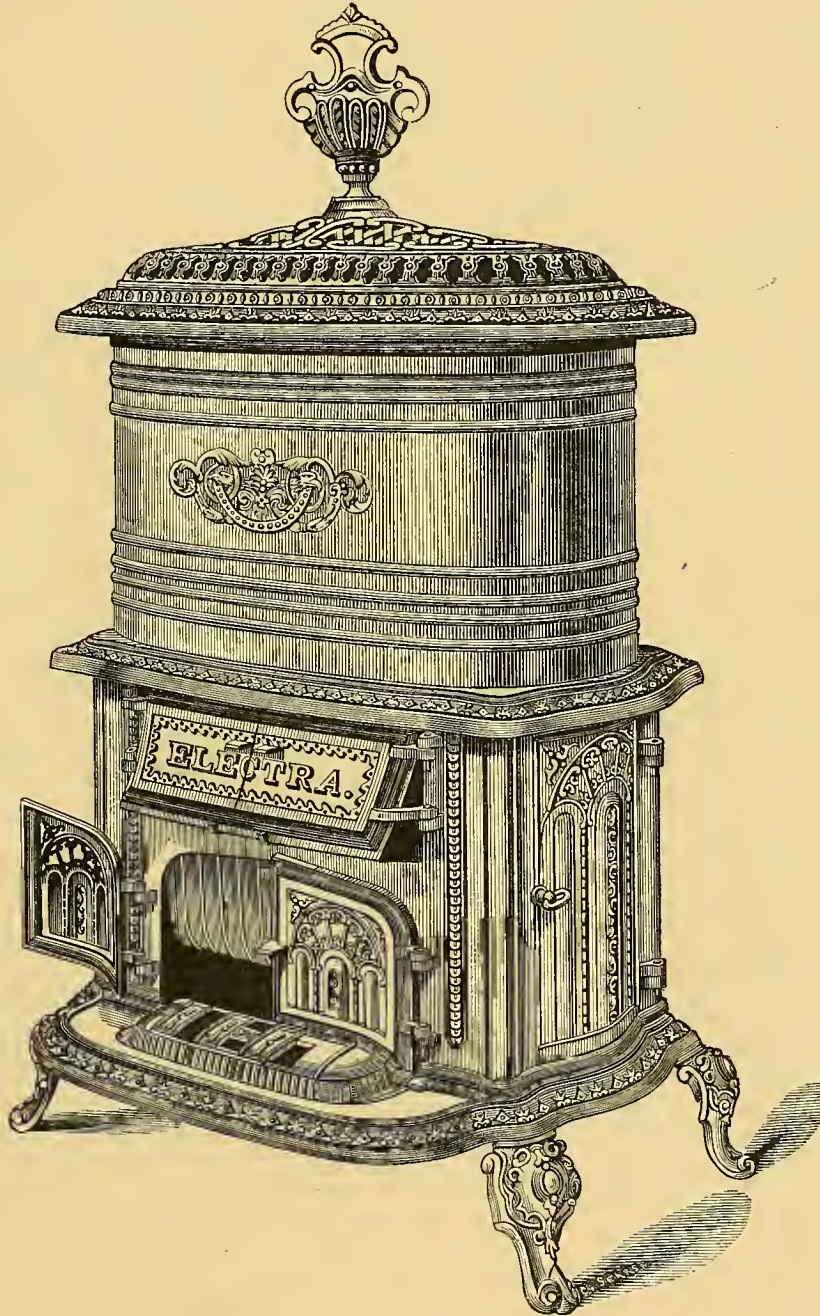


A new and beautiful pattern, acknowledged by the trade to be the most handsome Parlor Cook in the market, fitted to burn wood or coal. Extra care has been taken to mount these Stoves so that they will be superior to anything of the kind and make home *Pleasant*. This Stove has a shaking and dumping grate. The ornamental cover swings off.
Warranted to bake equally as well as any Cook Stove in the market.

The J. L. Mott Iron Works.

ELECTRA COTTAGE PARLOR,

FOR WOOD OR COAL. TWO SIZES—8 and 9 INCH HOLES.



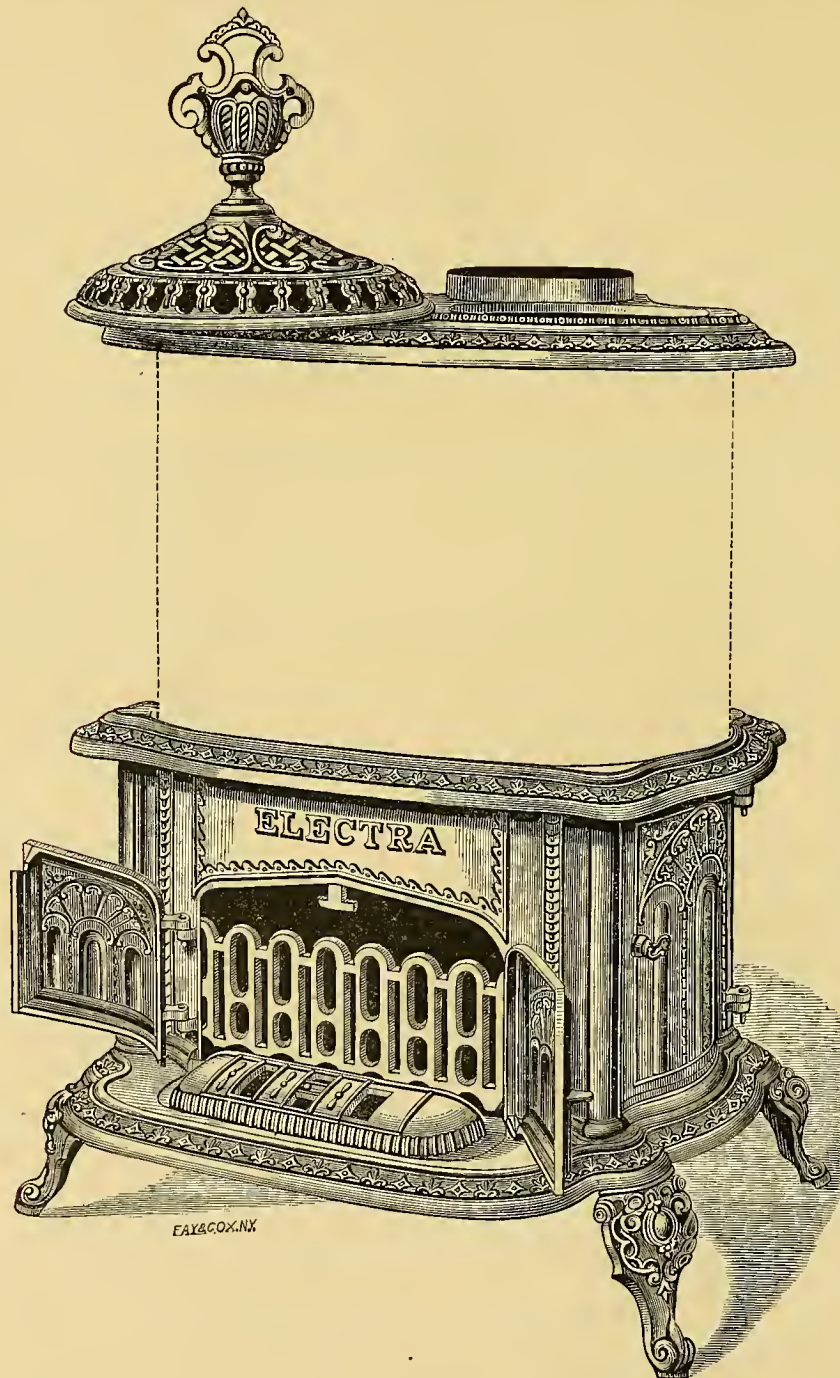
LENGTH OF WOOD FIRE BOX, 22 X 24 INCHES.

A First-class Cottage Parlor Stove, suitable for burning Wood, Anthracite or Bituminous Coal. New and Improved large Feeder and Swing Cover. Sets of Castings or mounted with Russia Iron complete.

The J. L. Mott Iron Works.

ELECTRA COTTAGE PARLOR.

FOR WOOD. Two Sizes, 8 and 9 Inch Holes.

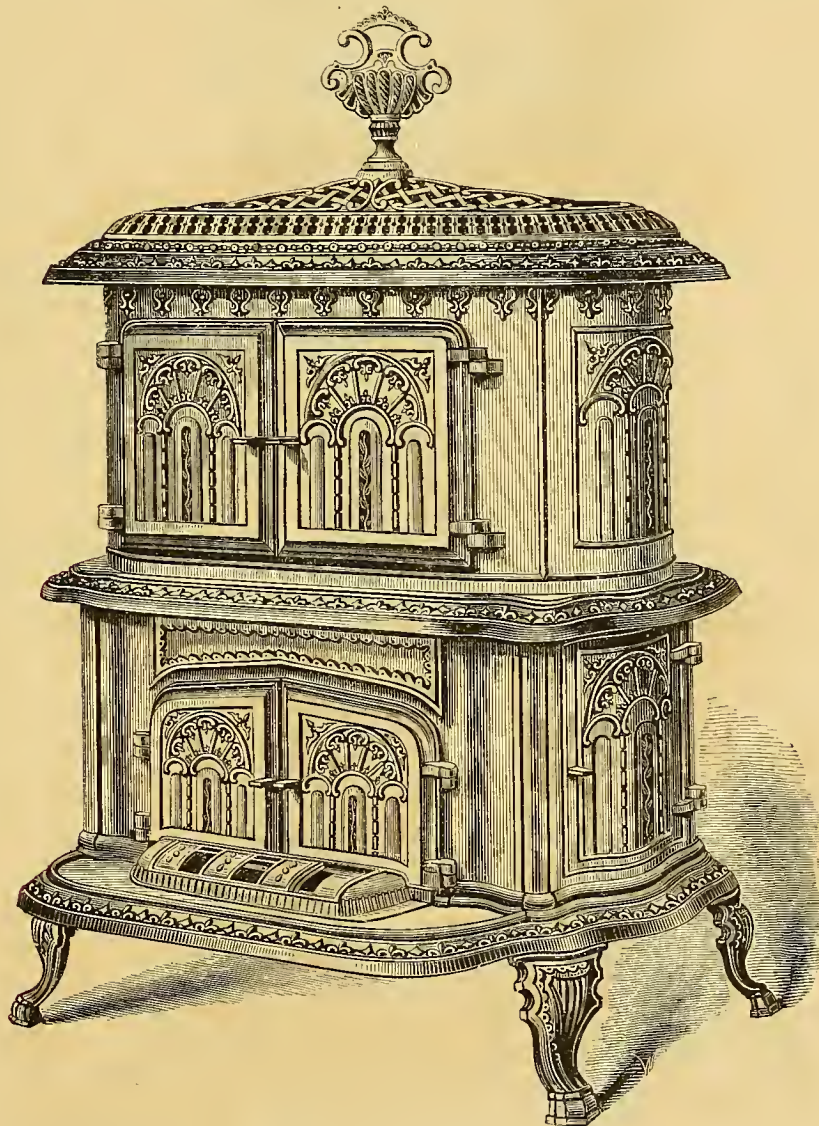


LENGTH OF FIRE BOX, 22 X 24 Inches.

A first-class Cottage Parlor Stove, suitable for burning Wood. New and Improved large Feeder and Swing Cover. Sets of Castings or mounted with Russia Iron complete.

ELECTRA PARLOR COOK.

FOR WOOD OR COAL, 8 and 9 INCH HOLES.

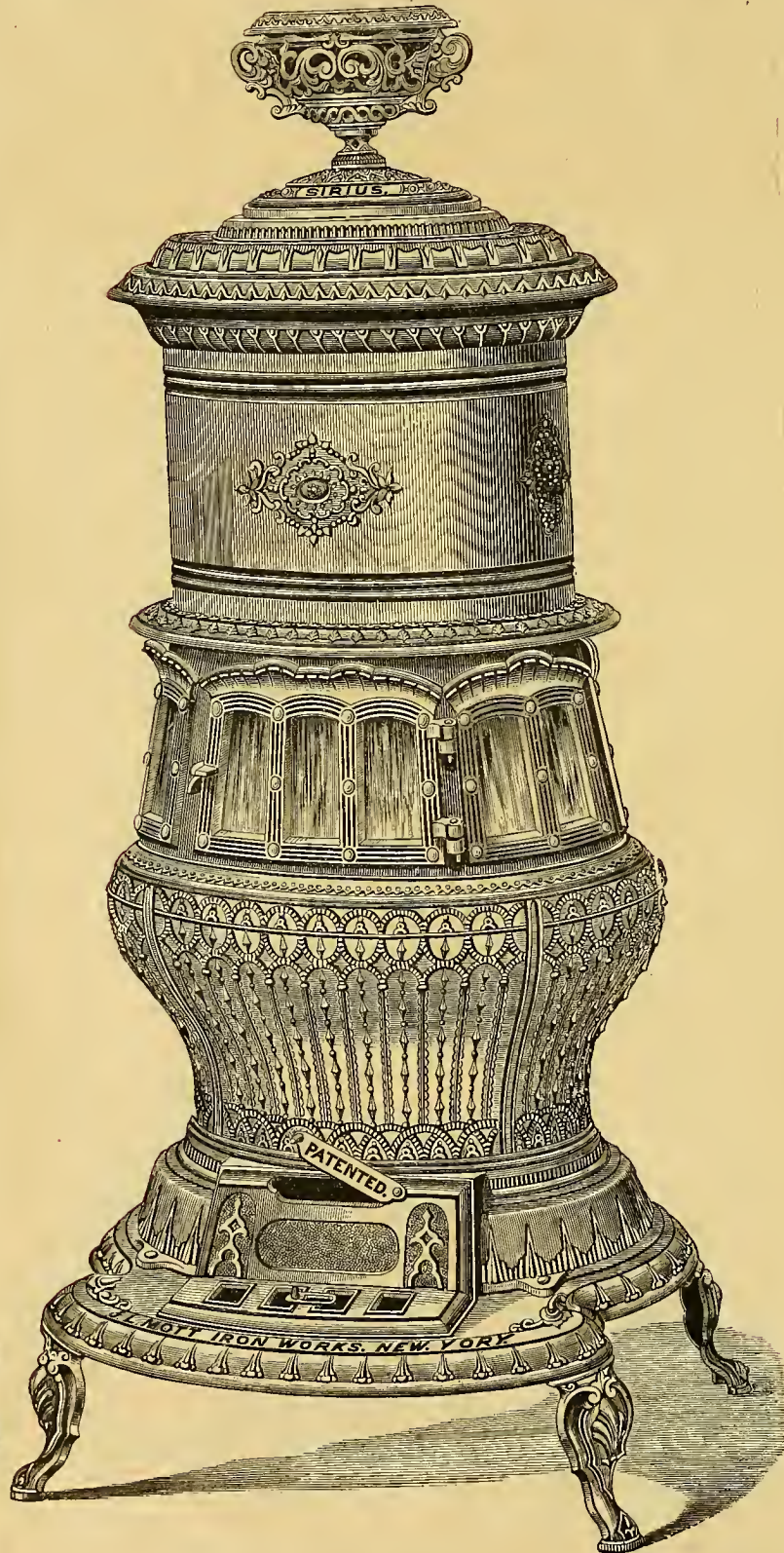


LENGTH OF WOOD FIRE BOX, 22 and 24 INCHES.

Patterns new this year. Great care has been taken in ornamenting this Stove so as to please the taste of the most fastidious.

SIRIUS.

A new first class OVAL Base Burner, Reversible Flue and Self Feeding Stove, improved Mica Light Section, and mounted in the best manner, for sale in sets of Castings, or made up complete with first quality Russia Iron.



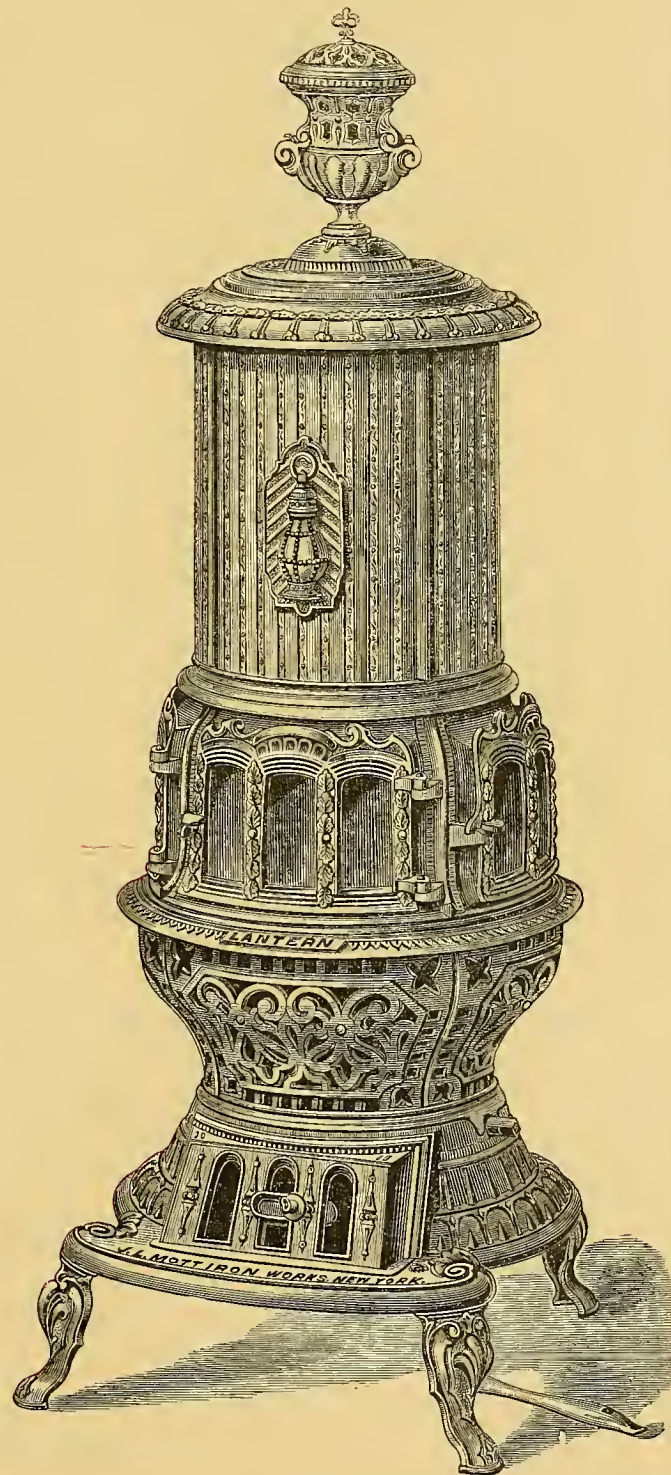
SIZES.

9 inch, Diameter of Fire Pot.	12 inch Diameter of Fire Pot.
10 " " " "	14 " " " "
11 " " " "	16 " " " "

LANTERN.

A LOW-PRICED, SELF-FEEDING BASE BURNER.

THE LANTERN is not a reversible flue stove, but has a direct draft, and is supplied with coal through a magazine or self-feeder, which gives a steady and continuous fire and insures a more economical consumption of coal than the old fashioned Cast Iron Globe stove, or the Russia Cylinder, and costs but little more. The Fire Box is Cast Iron (not lined with Fire Brick,) encased with a fancy Screen which serves to protect the face from the intense heat of red-hot iron, and prevents the clothes from coming in contact with it. The Mica Section is a new and useful feature in this style of Stove; with four Doors opening all round, and so arranged that the Mica can be taken out, cleaned, and placed back again without any difficulty.

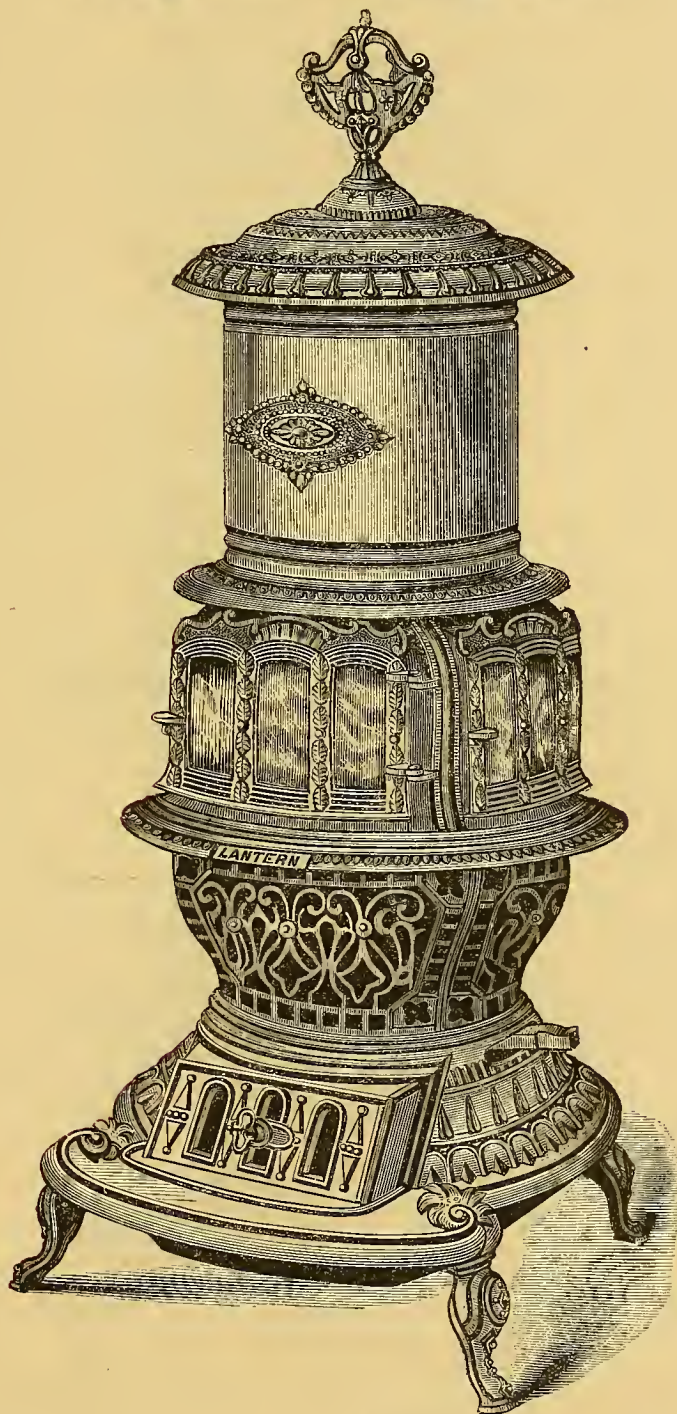


THE LANTERN for many purposes, takes the place of the plain Cast Iron and Russia Cylinders, being well adapted to Heating Stores, Saloons, Offices, and Public Rooms, and is specially adapted to meet the wants of a large class of persons who would like a Low-Priced, Self-Feeding Base-Burner Stove to warm their Parlors and Sitting-Rooms. No escape of gas or smoke, and being a direct draft, little or no instruction is required to operate it. Design of the most modern style. Castings made of the best iron and mounted in the most substantial and workmanlike manner. Use well screened Chestnut coal for No. 9, 10 and 11 Stoves; for No. 12 and 14, stove size *may* be used, but we recommend *Chestnut* coal for all sizes.

SIZES:

9 inch (diameter of Cast Iron Section)	12 inch (diameter of Cast Iron Section)
10 inch (" " ")	14 inch (" " ")
11 inch (" " ")	16 inch (" " ")

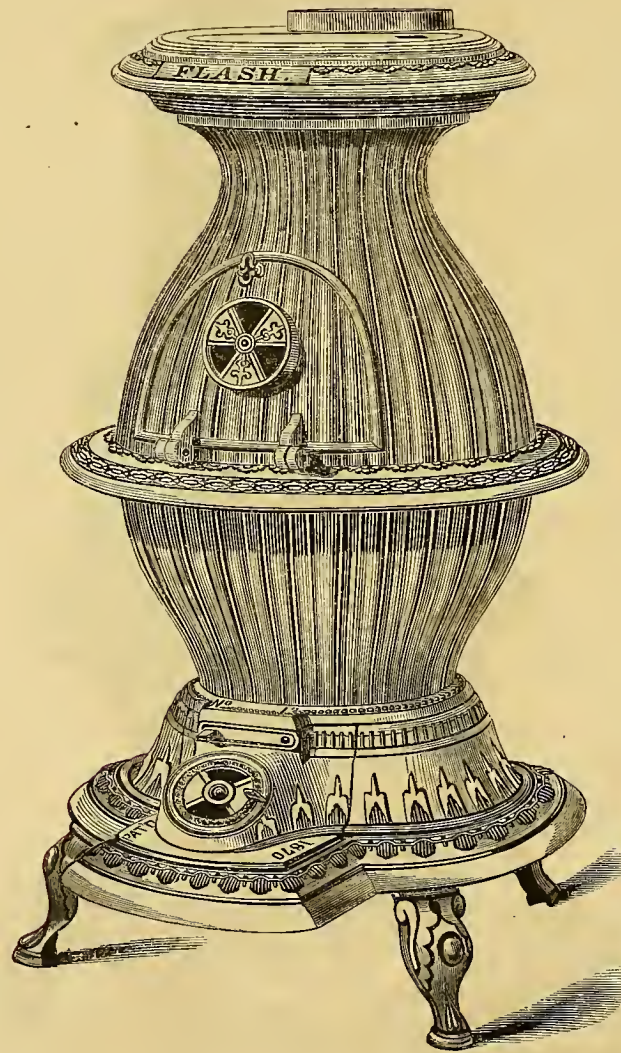
LANTERN.



A new first class Base Burner Stove, (not revertible flue,) with and without self feeder, Cast Iron Fire Pot with Fancy Screen direct radiation, new and improved style Mica Light Section. Castings in sets, or Mounted complete with Russia Iron.

SIZES.

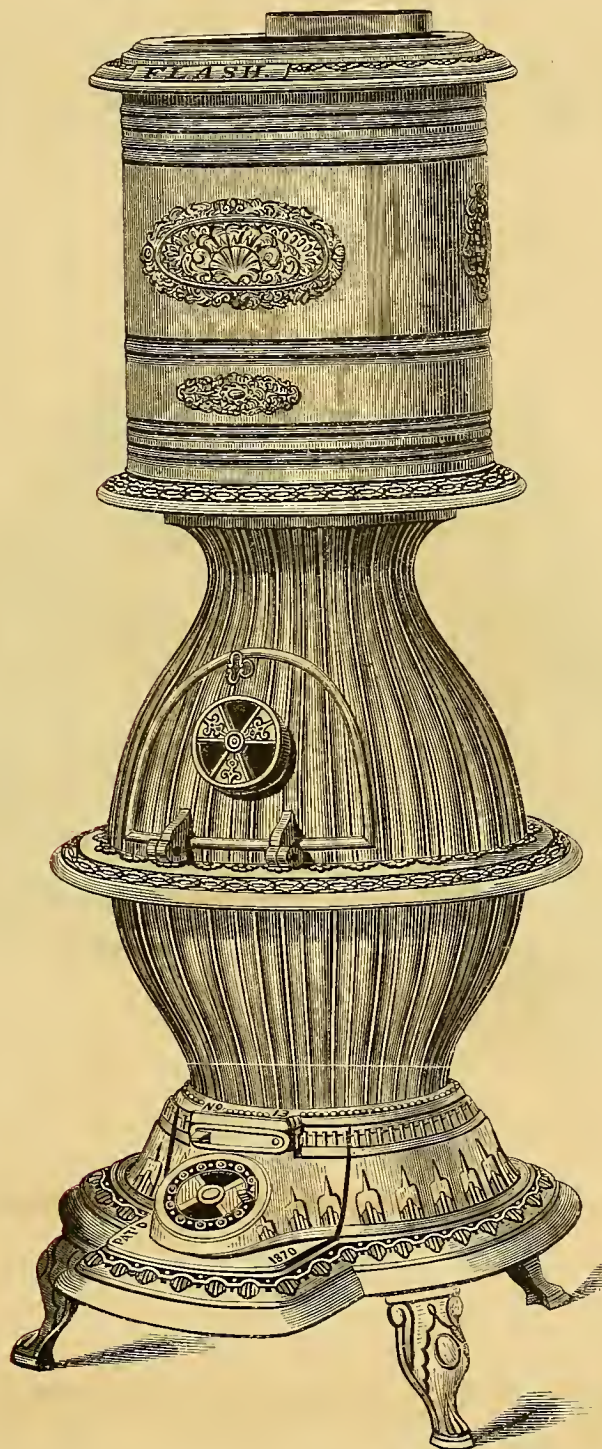
9 inch, (Diameter of Sheet Iron Section.)					12 inch (Diameter of Sheet Iron Section.)				
10	"	"	"	"	14	"	"	"	"
11	"	"	"	"	16	"	"	"	"

FLASH.

New Pattern Globe Stove. Low Price.

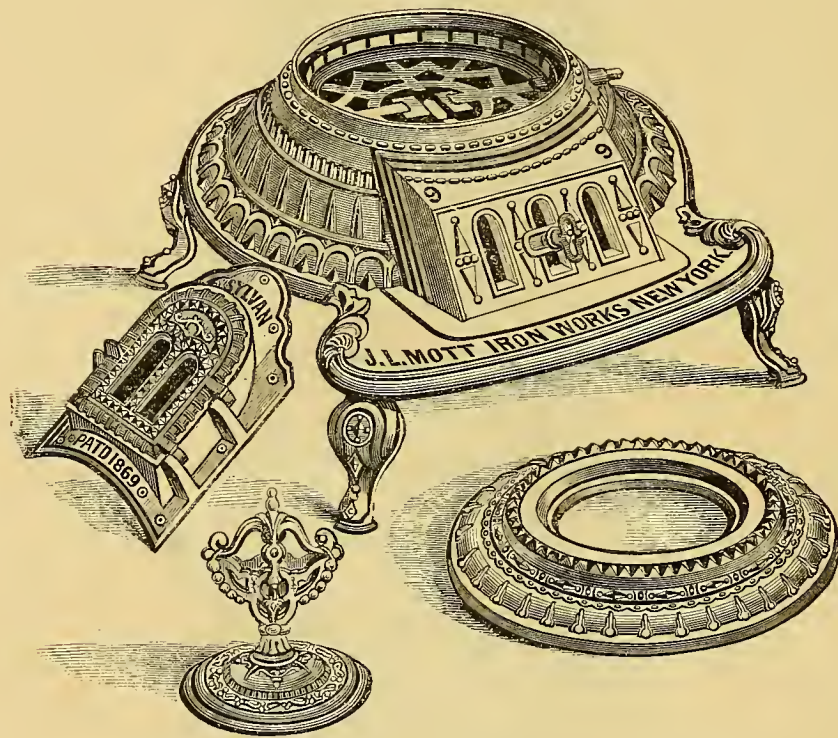
PLAIN STOVE, NOS. 11, 13, 15, 17 & 19.

FLASH.



New Pattern Globe Stove, with Castings for Russia Iron Top.

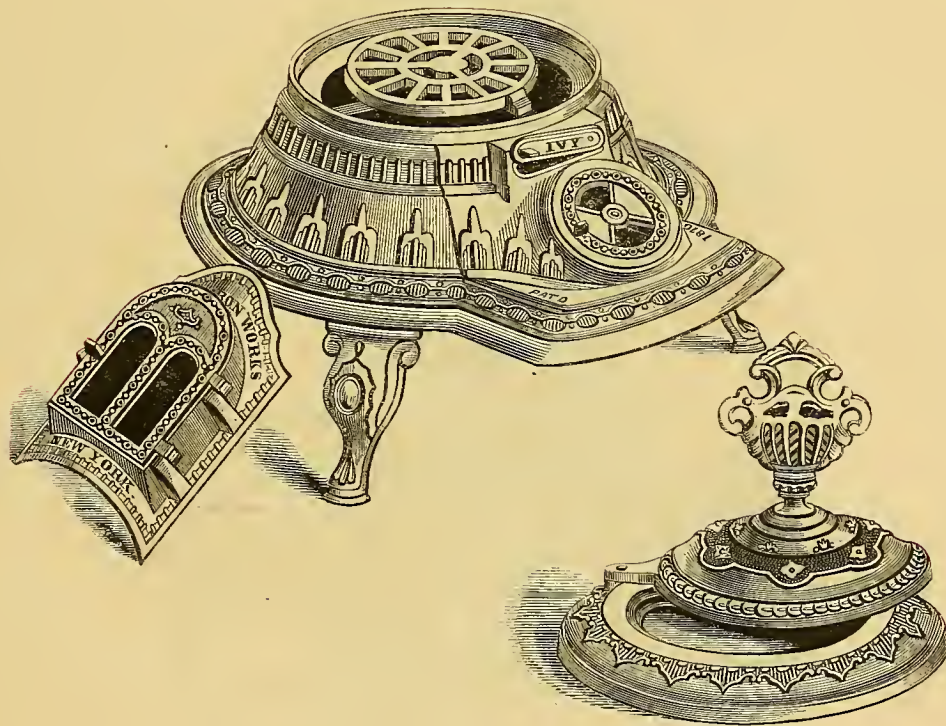
Nos. 11, 13, 15, 17 & 19.

SYLVAN BASE.

New pattern. beautiful design.—Patent rotating and dumping mill grate.

SIZES, 9, 10, 11, 12, 14 & 16 INCHES.

IVY BASE.

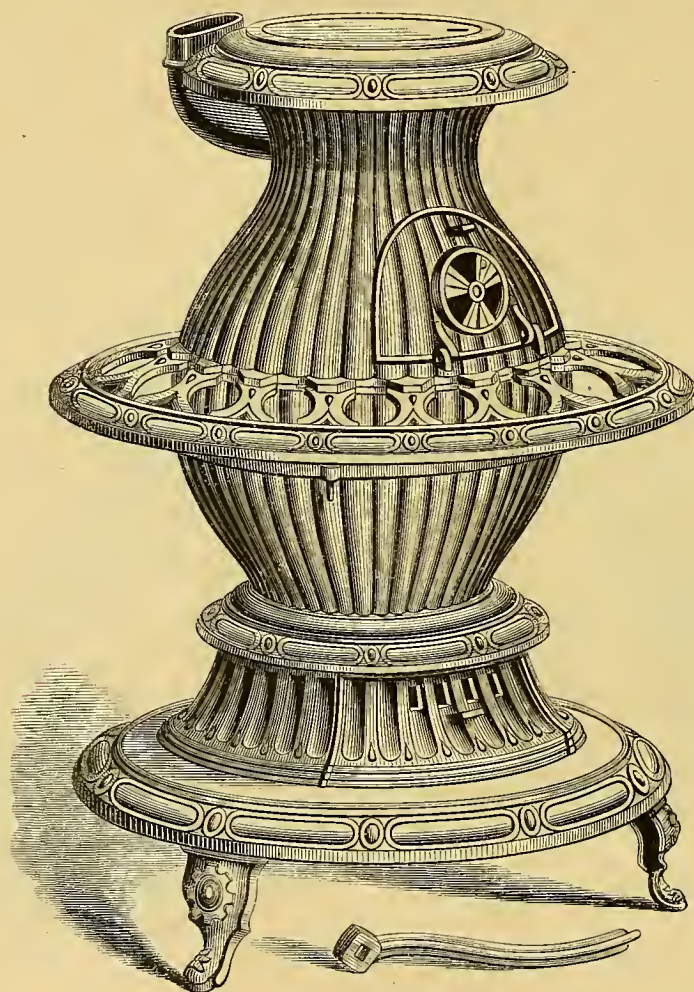


9, 10, 11, 12 & 14 INCH.

An entirely New Pattern Base for 1871, with Patent Shaking and Dumping Mill Grate, Swing Covers.

SCORCHER.

THE MOST BEAUTIFUL STOVE OF THE KIND IN THE MARKET.



The pipe, instead of being placed on the top ring or plate, as in the common class of Globe Stoves, is carried out at the back of the neck-piece by a *cast iron* Shifting Oval Collar. By this mode the top ring is entirely unobstructed, so that a boiler of any size may be placed on it if required; and then, by a novel arrangement of a division-plate in the sheet-iron top, in connection with a damper in the neck of the Stove (which will be seen by referring to cut on opposite page,) a downward draft is obtained before the heat passes off in the exit pipe.

We think it will be apparent to those familiar with the operation of stoves, that this arrangement will very much increase the amount of heat; and we do not hesitate to say that from our own experience in the use of one of these Stoves during the past winter, a saving in the consumption of fuel of at least one-quarter is obtained over the ordinary Globe Stove.

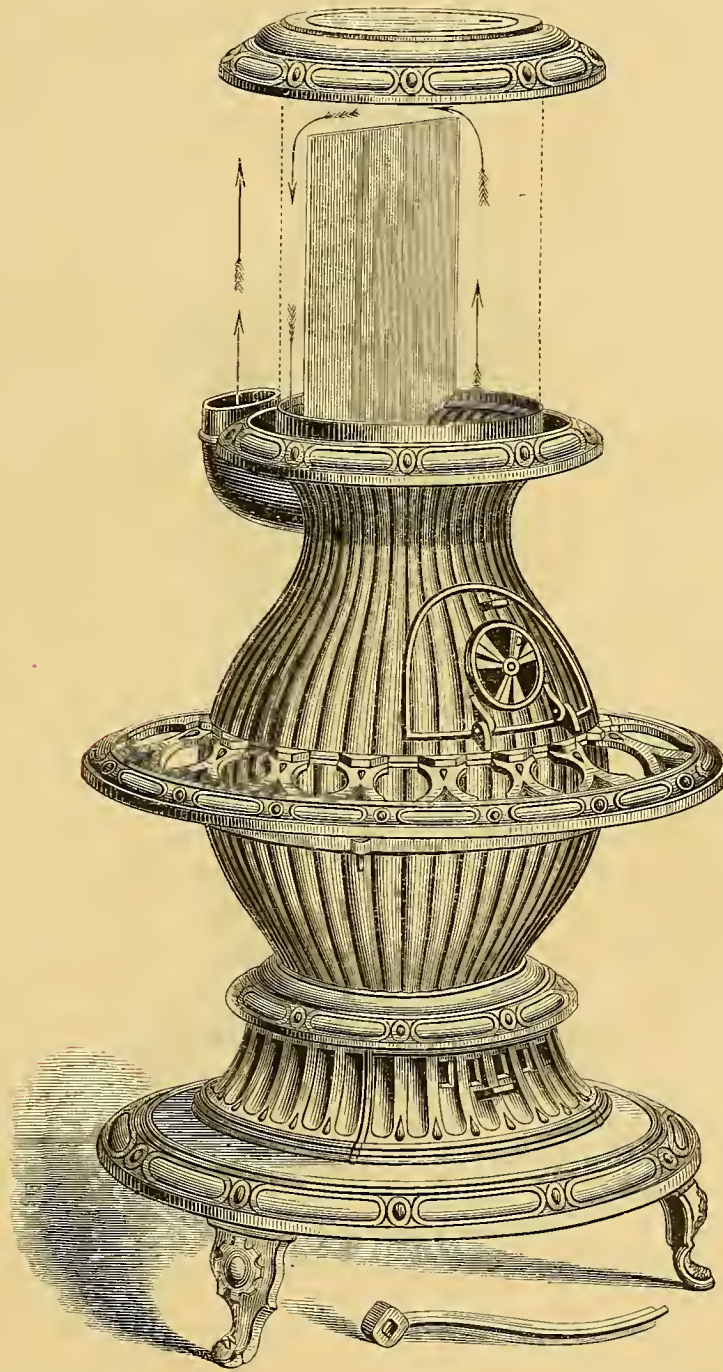
Another advantage over all other stoves of this kind is, the body is in three pieces, a narrow piece being placed between the two Globes, which prevents breaking from expansion and contraction.

FIVE SIZES.

No. 10.	10	INCH	DIAMETER.
"	12.	12	"
"	14.	14	"

No. 17.	17	INCH	DIAMETER.
"	21.	21	"

SCORCHER.

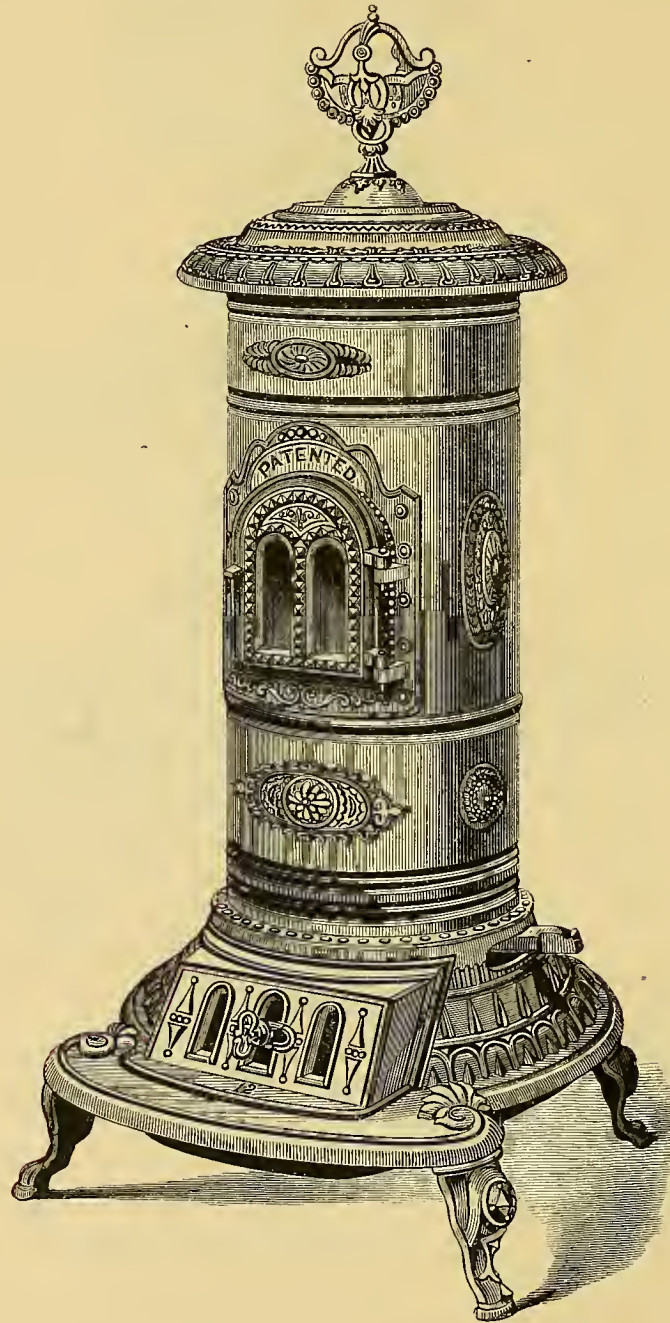


WITH CASTINGS FOR SHEET IRON TOP, Nos. 10, 12, 14, 17 & 21.

The J. L. Mott Iron Works.

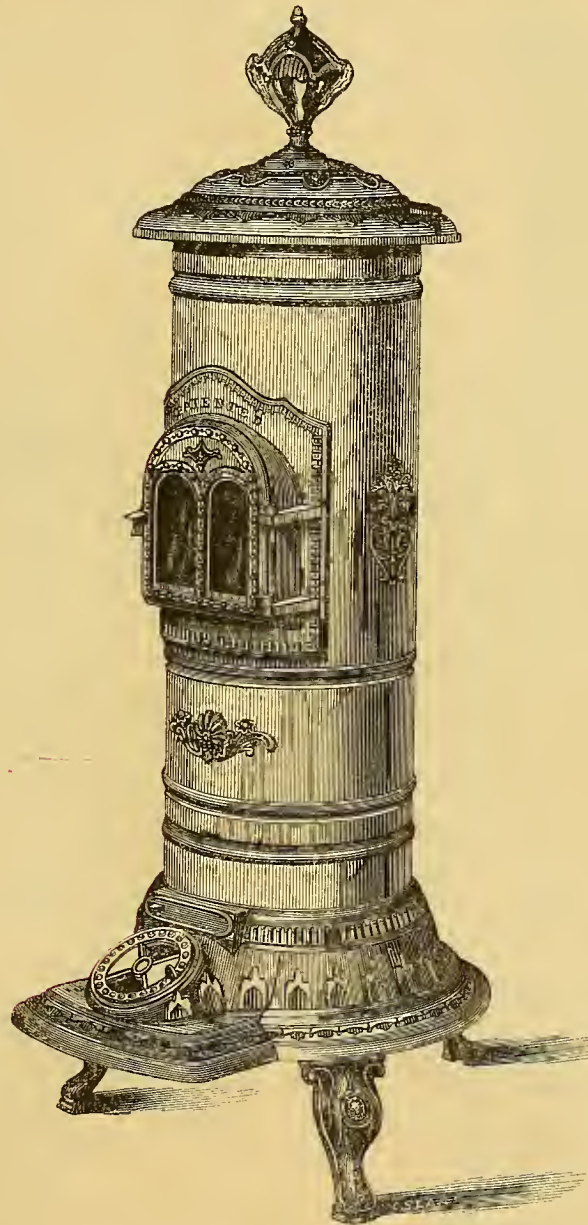
SYLVAN RUSSIA CYLINDER.

WITH SWING COVERS.



9, 10, 11, 12, 14 & 16 INCH.

IVY RUSSIA CYLINDER.

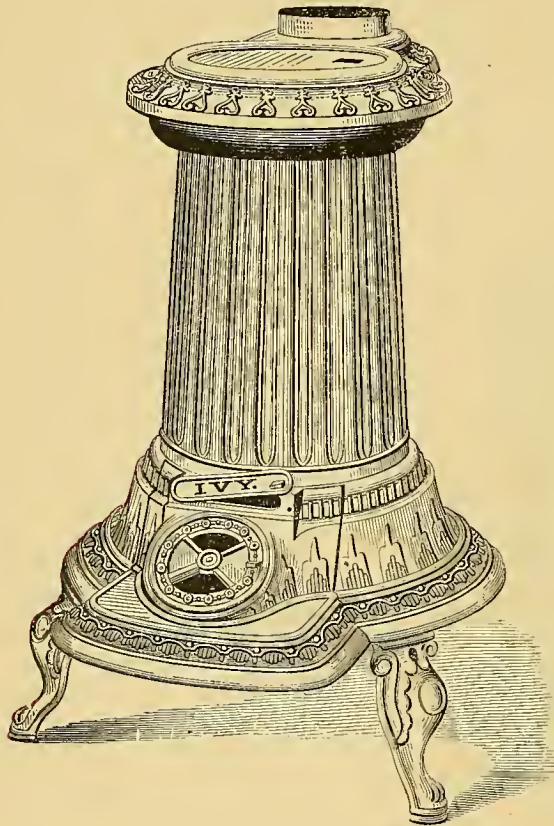


A new Cylinder Stove.

9, 10, 11, 12 & 14 INCH.

IVY STOVE.

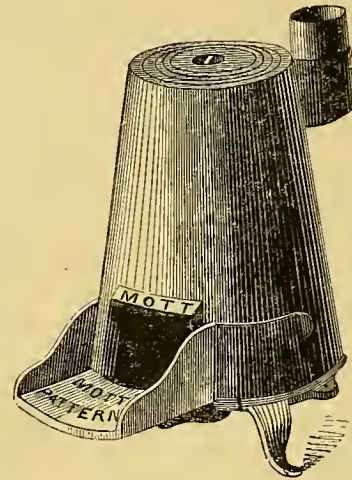
CAST CYLINDER.



9, 10, 11, 12 & 14 INCH.

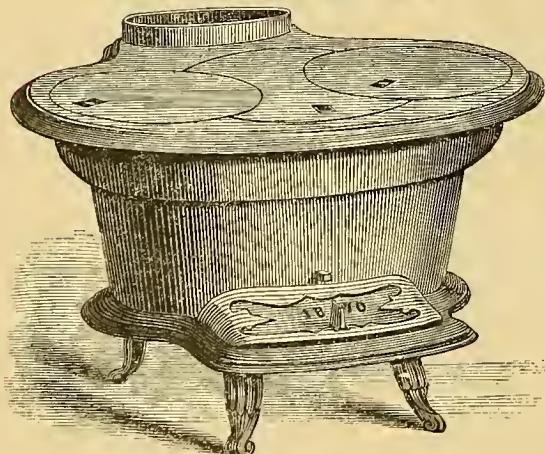
Entirely new and neat in design, with patent damper in top section.

TINNERS FIRE POT



Nos. 1 & 2.

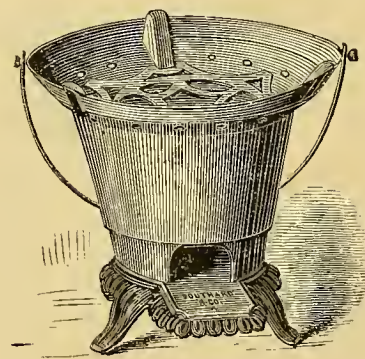
DUPLEX.



A New Pattern Two Boiler Furnace.

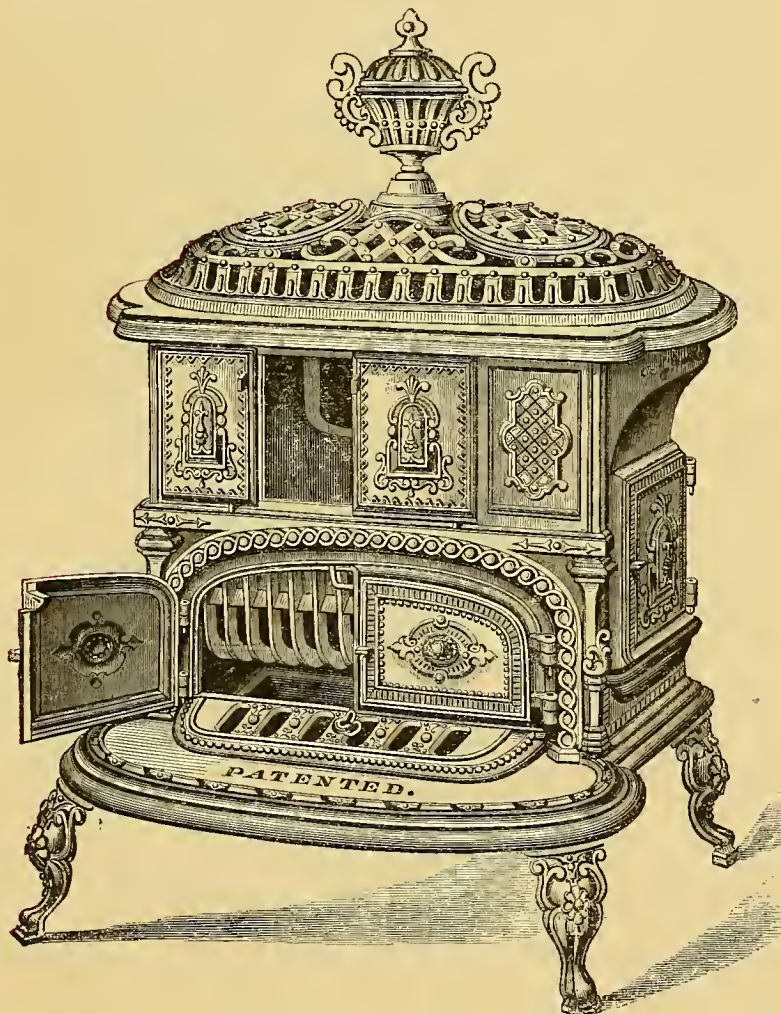
Nos. 6, 7 & 8.

CHARCOAL FURNACE.



Nos. 1, 2, 3, 4 & 5.

ECHO.



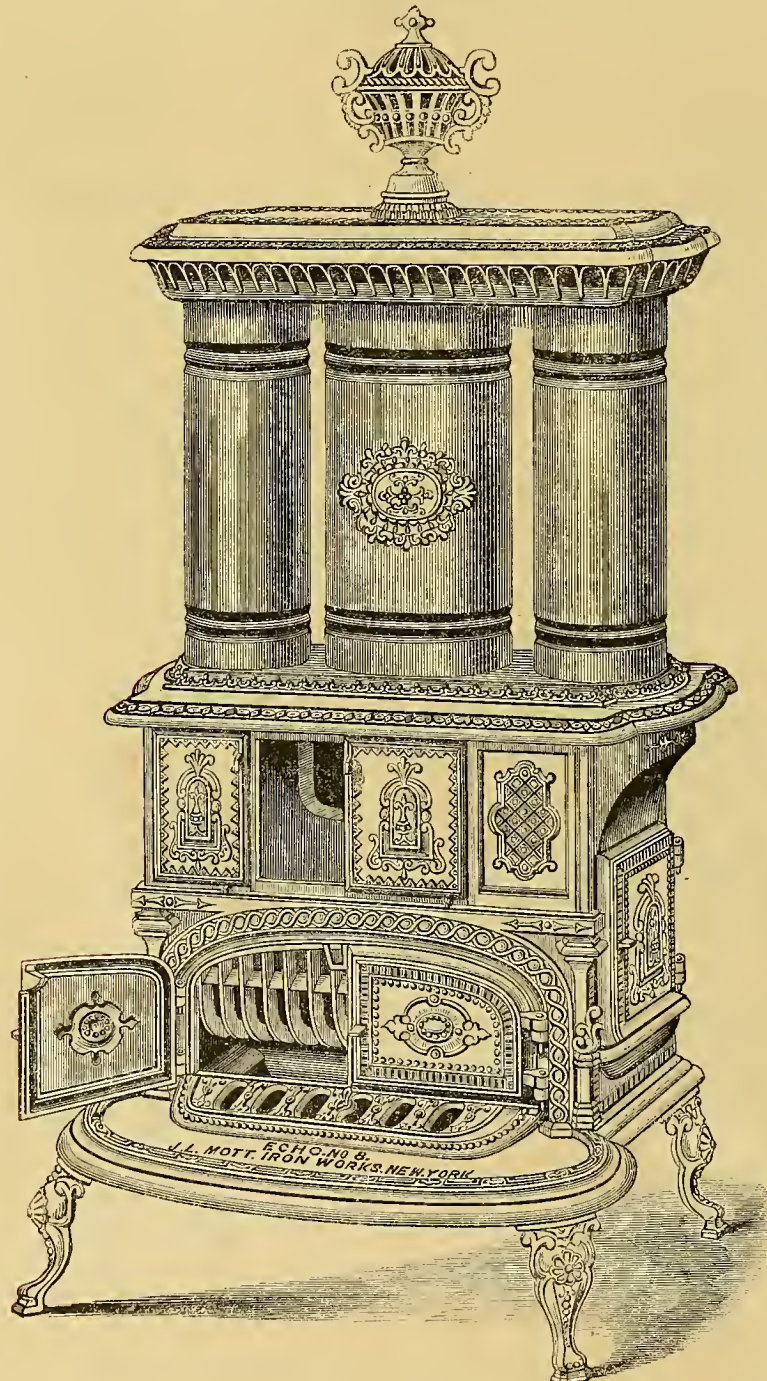
6, 7 & 8 INCH.

A new pattern Two Hole Stove, for Coal or Wood, just the thing for small rooms.

The J. L. Mott Iron Works.

ECHO.

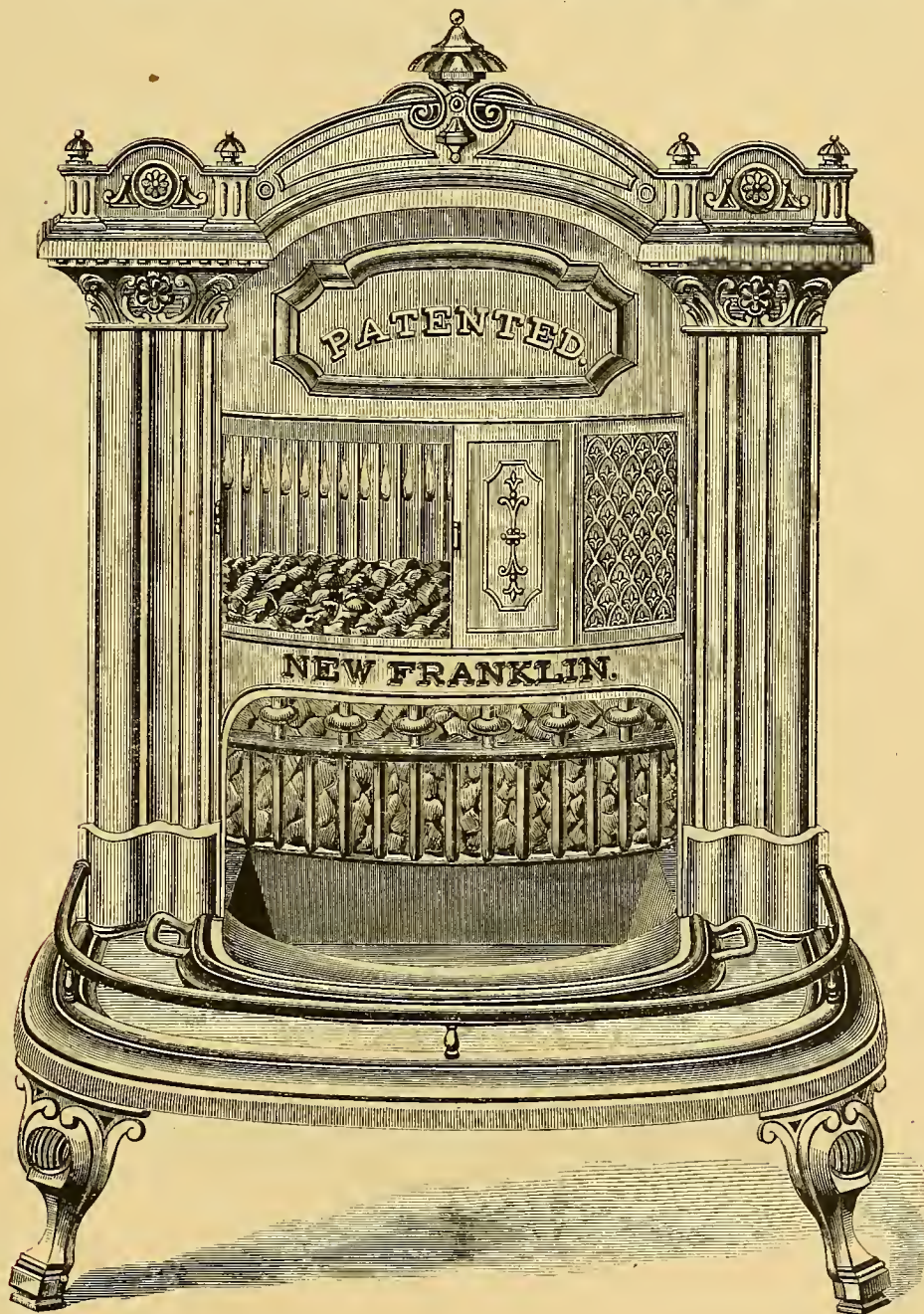
WITH RADIATING TOP.



The heat, instead of passing directly up the chimney, must necessarily traverse up the two side and down the middle pipes. This arrangement ensures a great amount of radiation.

6, 7 & 8 INCH.

“BEN” FRANKLIN.



A NEW FIRST-CLASS FRANKLIN, FOR ANY KIND OF COAL. PATENTED 1871.

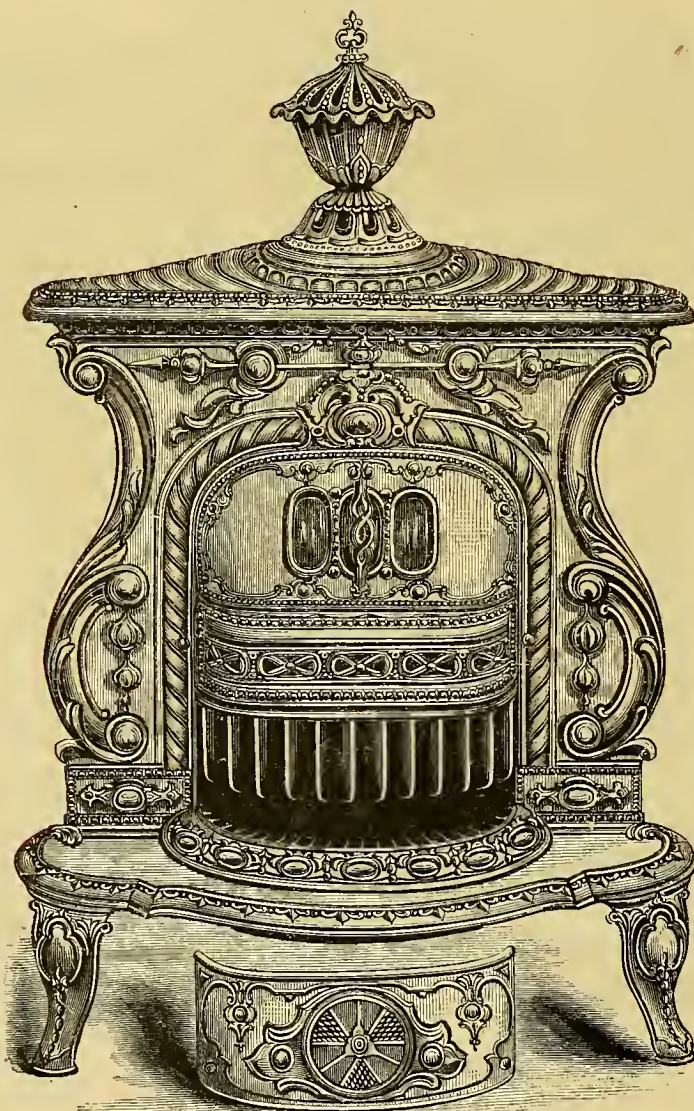
This Stove has double sliding doors—one sliding over the other, and both passing into a pocket in the column on either side. The bottom of Grate rolls and dumps.

The Stove is also supplied with *Hot-Air* for burning gases.

No. 12 has 12 inch Grate. No. 15 has 15 inch Grate. No. 18 has 18 inch Grate.

Plain Stove—Plain, with Polished Edges.

Japanned Stove—Japanned, with Polished Edges.

EMPIRE FRANKLIN.

Nos. 1, 2 & 3.

The reputation of this Stove is fully established, having been in the market for the past seven years, and has probably had the largest sale of any Franklin ever made.

MOTT'S PATENT
PORTABLE FURNACE & BOILER.



FOR FARMERS, BREWERS, BAKERS, HOTELS, RESTAURANTS & MANUFACTURERS OF SOAP, VARNISH, &c.

The cut on this page represents Mott's Patent Combined Furnace and Caldron, or Farmer's Boiler. This is our new and improved style, with longer and wider Fire Boxes, and the sides of the Furnace corrugated, so as to give additional strength, and to better resist the action of the heat. They are made to answer the same purpose as kettles set in brick, and are much more convenient and economical, besides coming at a lower price. One great advantage is, they are portable, and for the farmer this is a very great desideratum. They operate perfectly well out of doors, requiring merely a joint of stove-pipe to give the necessary draft. They are very extensively used by Brewers, Bakers, Farmers, Druggists, Pork Packers, &c. Almost all the parties in New York engaged in the last mentioned business use them.

SIZES, 10, 15, 22, 30, 45, 60, 90, 120, 140, 170 & 200 Gallons.

CALDRONS,

TO SET IN BRICK WORK.



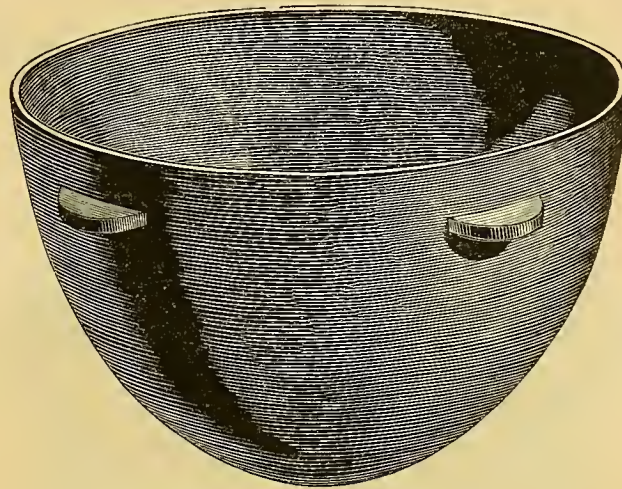
NOMINAL SIZE.	DIAMETER, INCLUDING RIM.	DEPTH INSIDE.	NOMINAL SIZE.	DIAMETER, INCLUDING RIM.	DEPTH INSIDE.
$\frac{1}{8}$ barrel,	18 inches,	10 inches.	$2\frac{1}{4}$ barrel,	35 inches,	20 inches.
$\frac{1}{4}$ "	$20\frac{1}{2}$ "	11 "	$2\frac{1}{2}$ "	$36\frac{1}{2}$ "	$22\frac{1}{2}$ "
$\frac{3}{8}$ "	23 "	13 "	3 "	41 "	$22\frac{1}{2}$ "
$\frac{7}{8}$ "	27 "	16 "	$3\frac{1}{2}$ "	44 "	$22\frac{1}{2}$ "
1 "	28 "	$16\frac{1}{2}$ "	4 "	47 "	$23\frac{1}{2}$ "
$1\frac{1}{4}$ "	29 "	18 "	4 "	Curb raised 4 inches, 140 gallons.	
$1\frac{1}{2}$ "	32 "	18 "	4 "	8 "	170 "
2 "	35 "	$19\frac{1}{2}$ "	4 "	12 "	200 "

EXTRA SIZES.

$5\frac{1}{2}$ barrel,	53 inches,	26 inches.	8 barrel,	58 inches,	$31\frac{1}{2}$ inches.
6 "	52 "	$32\frac{1}{2}$ "	10 "	59 "	39 "
7 "	56 "	$27\frac{1}{2}$ "	16 "	72 "	45 "

RATED AT 30 GALLONS TO THE BARREL.

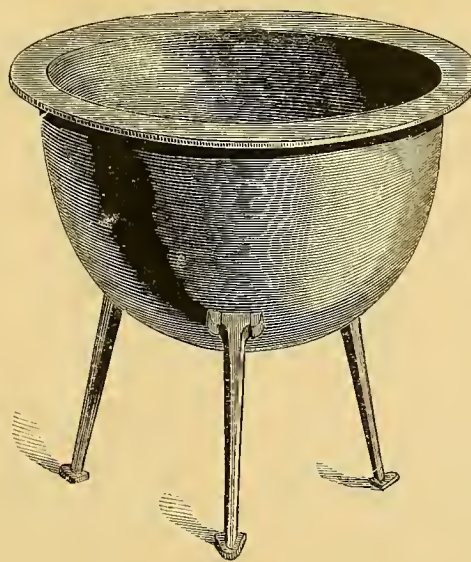
POTASH KETTLES.



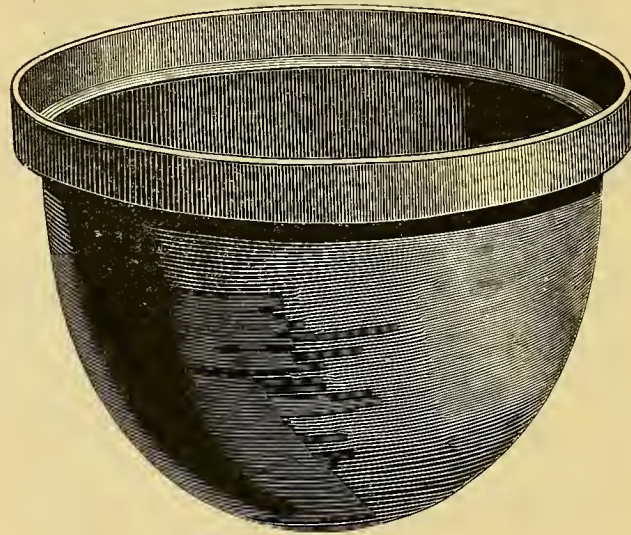
100 gallons, 44 inches over top, 21 inches deep, about 850 lbs. 150 gallons, 45 inches over top, 27 inches deep, about 1000 lbs.

ANY OTHER SIZE MADE TO ORDER.

THIS CUT REPRESENTS THE CALDRON,



WITH MOVABLE LEGS.

SOAP BOILERS' KETTLES.

Off-set Curb 48 inches across top, 32 inches deep, about 800 lbs. Double Curb, 52 inches over top, 30 inches deep, about 1,250 lbs.

ANY OTHER SIZE MADE TO ORDER.

ENAMELED CALDRONS.

10, 15, 22 & 30 GALLONS.

DOUBLE OR JACKET STEAM KETTLES.

WITH MOVABLE LEGS.



NOMINAL SIZES.

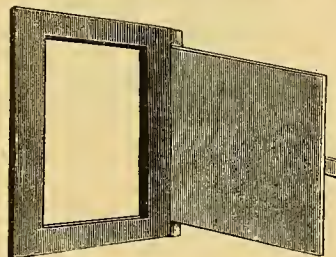
$\frac{1}{3}$	barrel,	tested to 75 pounds pressure.
$\frac{1}{2}$	"	" 75 "
$\frac{2}{3}$	"	" 75 "
1	"	" 75 "
$1\frac{1}{2}$	"	" 75 "
2	"	" 50 "

NOMINAL SIZES.

$2\frac{1}{2}$	barrels,	tested to 50 pounds pressure.
3	"	" 50 "
$3\frac{1}{2}$	"	" 50 "
4	"	" 50 "
$5\frac{1}{2}$	"	" 50 "

Rated at 30 Gallons to the Barrel.

DOORS & FRAMES FOR SETTING KETTLES.



10x12, Door and Frame and Anchor Rods, extra heavy. 12x16 Door and Frame. 21x16 Frame and 2 Folding Doors. 20x14 Door and Frame, heavy. 22x16 Door and Frame, light.

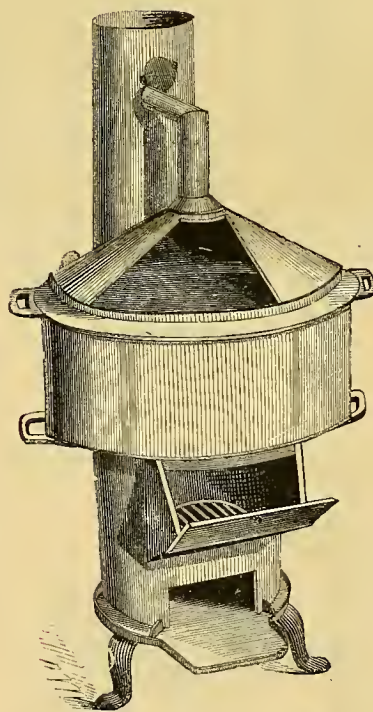
GRATE BARS,

18, 22, 24, 30 & 36 INCHES.

FURNACE AND KETTLE

FOR MELTING LEAD.

CAPACITY OF KETTLE, 8 GALLONS.

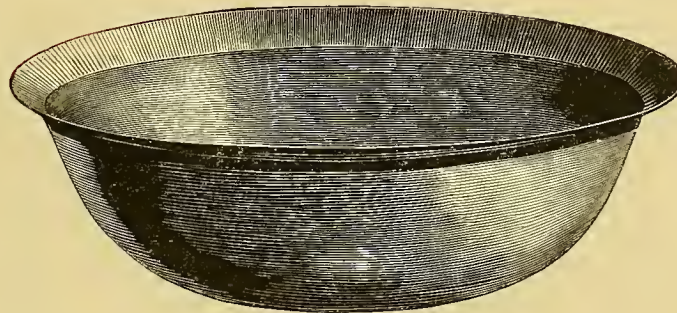


The above is for melting metal. The fire passes entirely around the Kettle, same as when set in brick work. There is a cast iron top made with a slide cover to open to take out the melted metal.

The small Pipe attached to the conical top, conveys the offensive smoke from Scrap Lead into the Smoke Pipe, and then passes up the chimney. They are in general use among Plumbers and Stove dealers in this city, and extensively used for other purposes.

SUGAR PANS.

SHALLOW PATTERN.



25 gallons, 38 inches diameter, 11 inches deep. 30 gallons, 40 inches diameter, 12 inches deep. 40 gallons, 44 inches diameter, 14 inches deep. 50 gallons, 48 inches diameter, 15 inches deep. 60 gallons, 51 inches diameter, 16 inches deep. 80 gallons, 57 inches diameter, 17 inches deep. 100 gallons, 60 inches diameter, 18 inches deep. 125 gallons, 63 inches diameter, 19 inches deep. 150 gallons, 67 inches diameter, 21 inches deep.

DEEP PATTERN, Rims more Flaring.

MADE TO ORDER AT SPECIAL RATES.

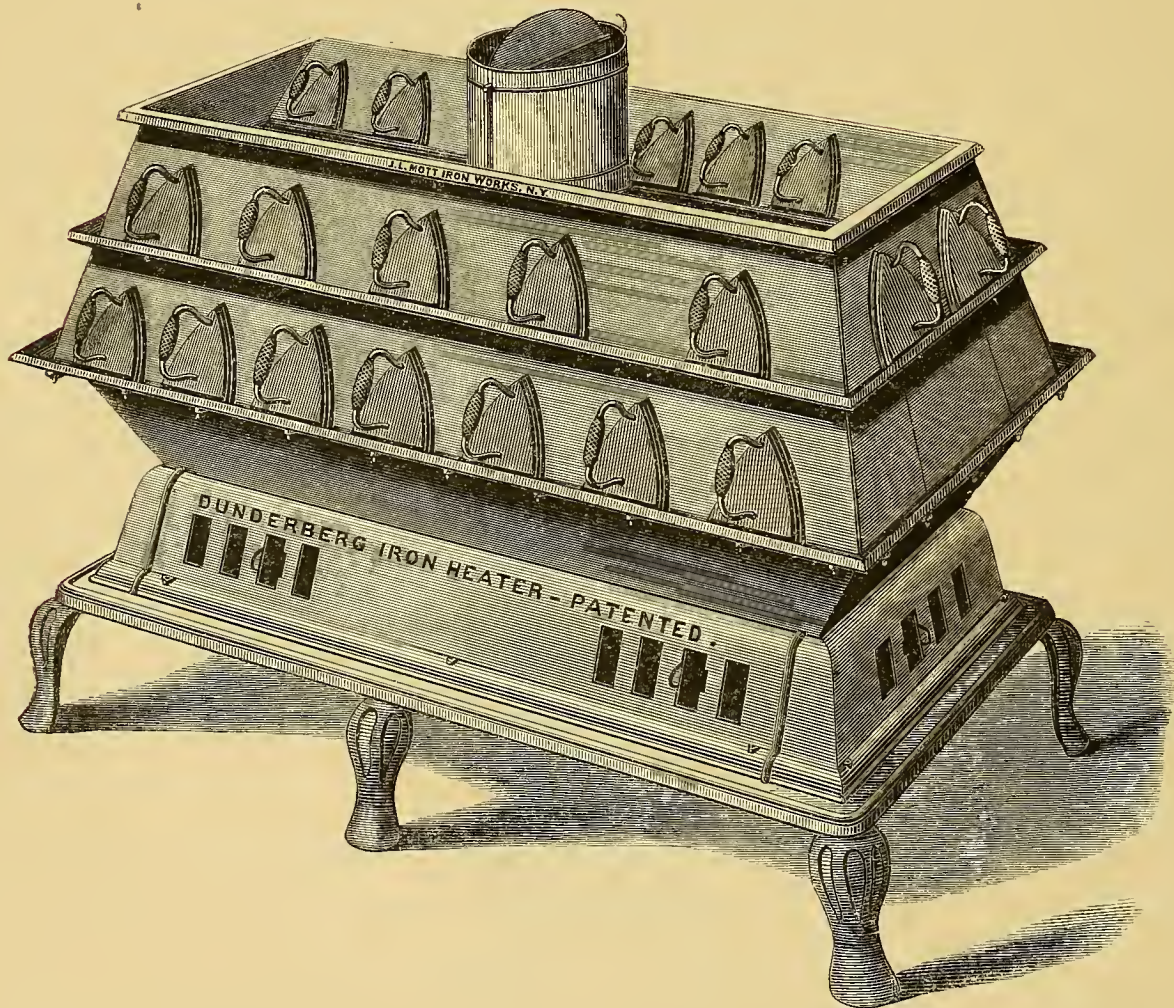
100 gallons, 60 inches diameter, 23 inches deep. 125 gallons, 54 inches diameter, 24 inches deep. 150 gallons, 57 inches diameter, 25 inches deep. 200 gallons, 63 inches diameter, 28 inches deep.

Extra Sizes Made to Order at Special Rates.

20 gallons, 35 inches diameter, 10 inches deep. 180 gallons, 70 inches diameter, 24 inches deep. 200 gallons, 70 inches diameter, 26 inches deep. 250 gallons, 70 inches diameter, 31 inches deep.

THE ABOVE PANS ARE ALL OUTSIDE MEASURE. RIMS FROM 4 TO 6 INCHES WIDE.

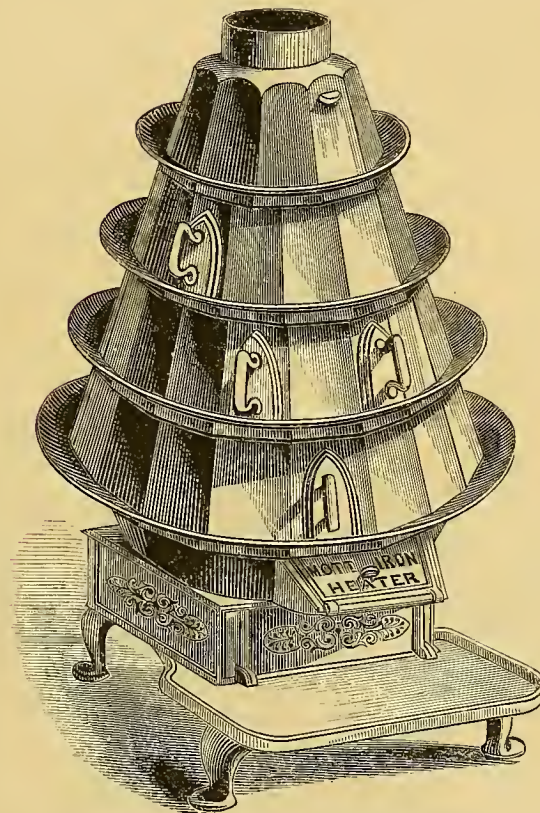
DUNDERBERG IRON HEATER.



The largest and most powerful Iron Heater in the market. Made expressly for LAUNDRIES, LARGE HOTELS AND PUBLIC INSTITUTIONS, and will accommodate from 80 to 100 Irons, according to size.—Is provided with two Fires whereby the fuel is economized, and the heater may be used in a single or double capacity, as the wants of the business may require. The greatest care has been taken in its construction, to ensure efficiency and durability. Warranted to give entire satisfaction.

IRON HEATER,

NO. 3, HEATS 51 IRONS.



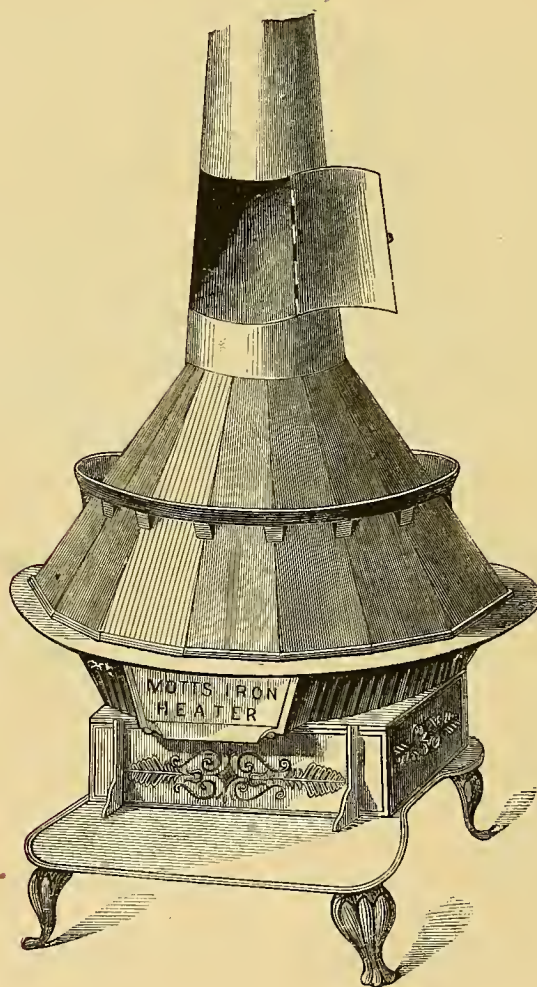
MADE EXPRESSLY FOR

LARGE HOTELS, PUBLIC INSTITUTIONS AND LAUNDRIES.

The Castings are very heavy and durable. This size is in use in most of the large Hotels and Laundries in the country, and has given entire satisfaction. Single or double coils of Pipe attached for heating from 100 to 300 gallons of water, if desired.

IRON HEATER.

No. 2, HEATS 32 IRONS.



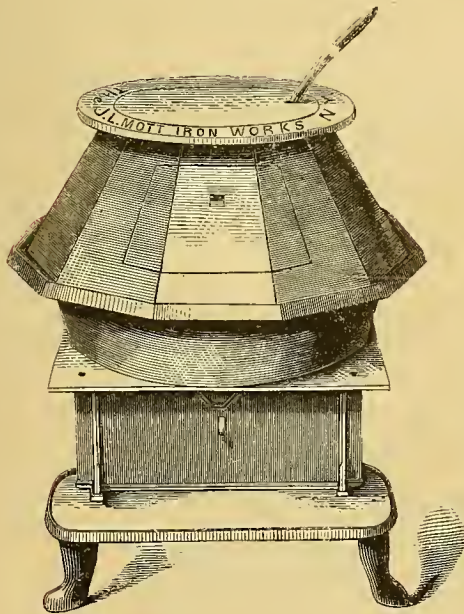
They are well adapted for Hotels and Public Institutions. They are used in almost all our Hotels in New York, and by the various institutions connected with the city.
Single or double Coils of Pipe attached, for heating from 100 to 300 gallons of water if desired.

IRON HEATERS.

NO. 1, HEATS 11 IRONS.

NO. 1,

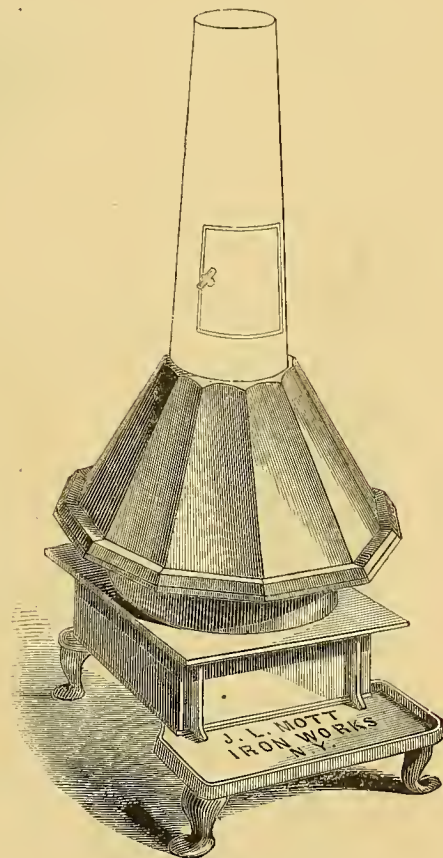
WITH BOILER-TOP FOR HEATING WATER.



Holds Nine Irons around the sides, and when a Boiler is not in use, Five or Six more Irons may be placed on top.

With this pattern, boiling water and heating Irons is done at one time. Adapted to Large Families, Small Hotels and Laundries.

We attach single or double Coils of Pipe for heating from 50 to 200 gallons of water, if desired.



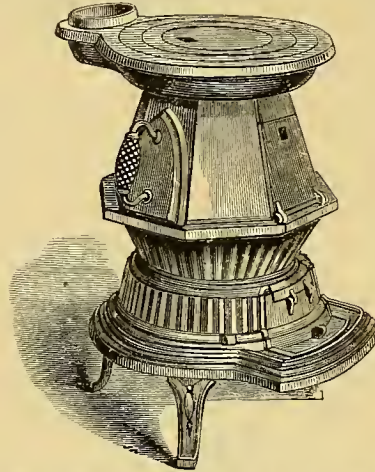
For Small Hotels, Laundries and Large Families Also adapted for heating Tailors Irons

Single or double Coils of Pipe attached, for heating from 50 to 200 gallons of water, if desired.

The J. L. Mott Iron Works.

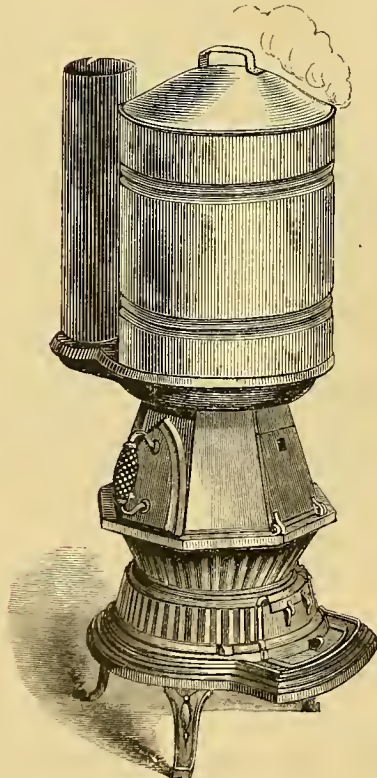
IRON HEATERS.

NO. 8, FOR FAMILY USE.



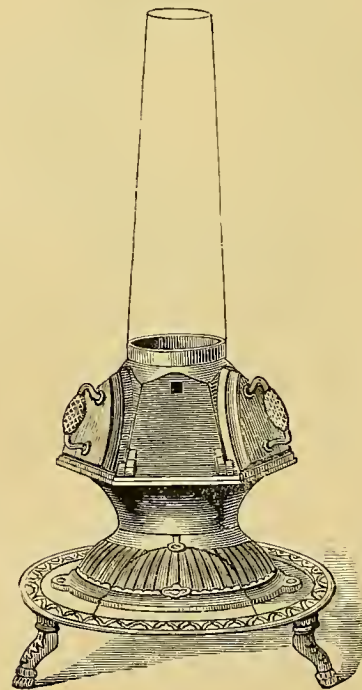
Holds Eight Irons around the sides, and when a Wash Boiler is not in use, more Irons may be placed on the top.

NO. 8, WITH WASH BOILER.



HEATS 8 IRONS ON SIDE.

NO. 0, HEATS 6 IRONS.



FOR FAMILY USE.

CAST IRON STABLE FURNITURE.

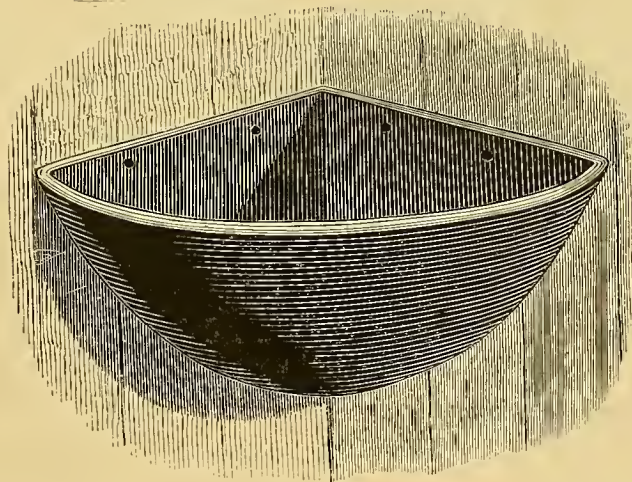
Now on exhibition at our Warerooms, St. George Building, corner Beekman and Cliff Streets, showing different patterns of Stalls, fitted up in the most approved Styles.

IRON STABLE FURNITURE

Is now almost exclusively used in Public and Private Stables. Is more cleanly than wood, costs but little more, and is DURABLE.

CORNER FEED BOX.

QUARTER CIRCLE.



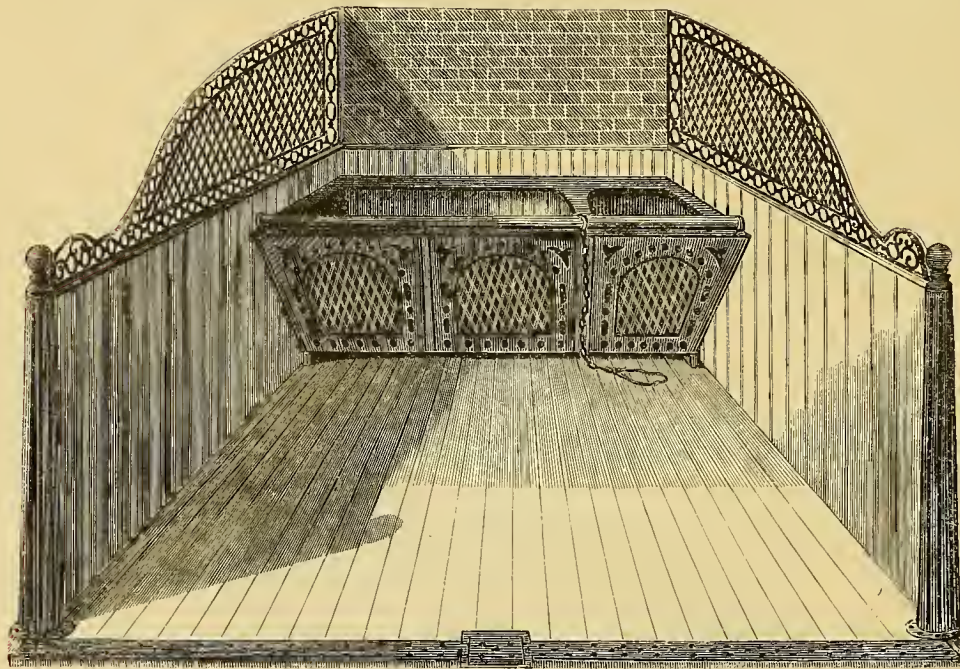
PLAIN, GALVANIZED AND ENAMELED.

Used in the best Stables in the Country. It is made with rounded bottom, and there are no covers in which food may lie and sour.

Length on sides, 18 inches.

*MOTT'S NEW PATTERN MANGER.**TWO SIZES.*

With Hay and Oat Box and Nibbling Roller Bar combined, all made of Cast Iron.

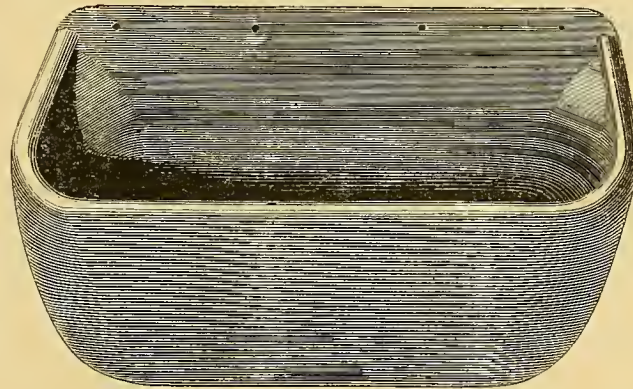


DIMENSIONS—No. 1. 4 feet 6 inches long; 2 feet 1 inch high; 1 foot 8 inches deep.
 No. 2. 5 feet 1 inch long; 2 feet 1 inch high; 1 foot 8 inches deep.

The Engraving shows a Stall fitted up with the above described Manger. The bottom of Hay Box is provided with Cast Iron Grating, through which the hay-seed and dirt falls to the floor.

With Plain Iron Oat Box.
 With Galvanized Oat Box.
 With Enameled Oat Box.

HALF CIRCLE FEED BOX.

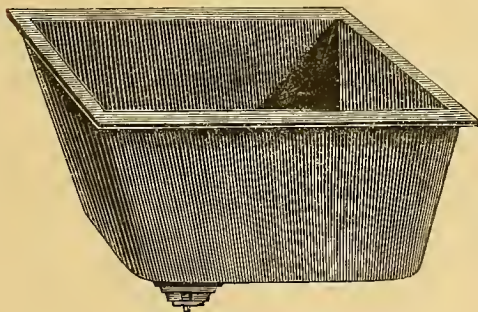


PLAIN, GALVANIZED & ENAMELED.

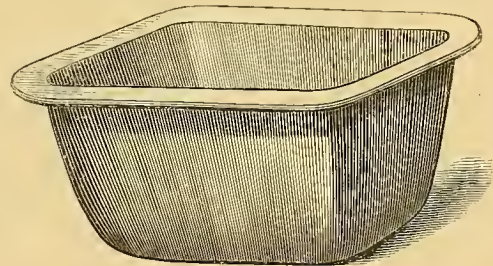
Made on same principle as Quarter Circle Feed Box. Length on back, 24 inches. Width 14 inches.

SQUARE FEED BOXES.

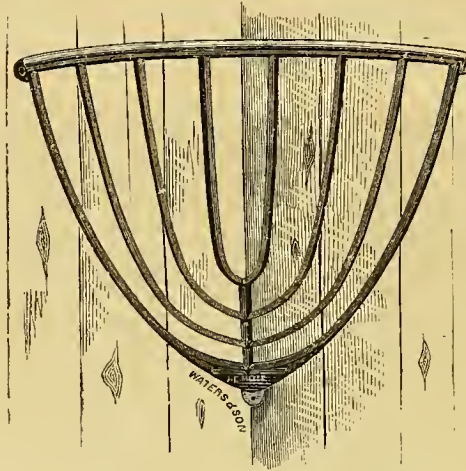
16 x 16 x 10 inches deep.
20 x 14 x 12 inches deep.



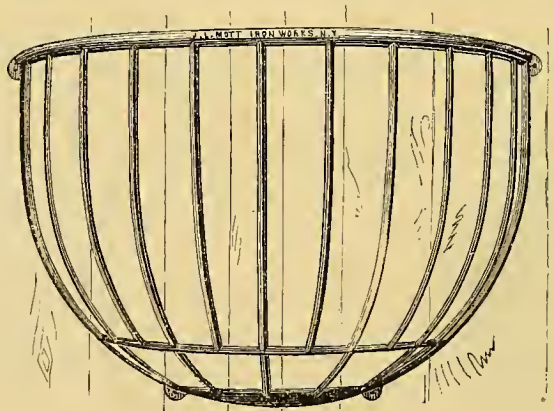
With round corners and rounded bottom, 21½ x 18½
x 12 inches deep.



PLAIN, GALVANIZED AND ENAMELED.

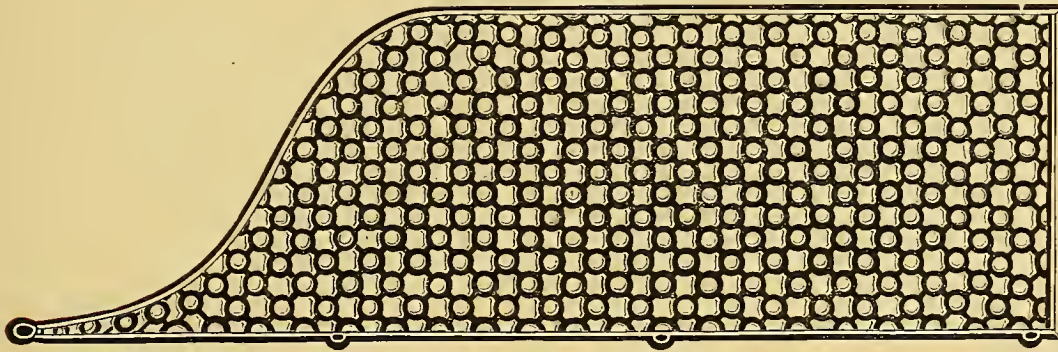
QUARTER CIRCLE HAY RACK.*PLAIN AND GALVANIZED.*

The Bars are Diamond Shaped, with slightly rounded edges, quite as good as the Wrought Iron Rack, and at about one half the cost. Length across top, 2 feet 10 inches. Height, 2 feet 4 inches.

HALF CIRCLE HAY RACK.

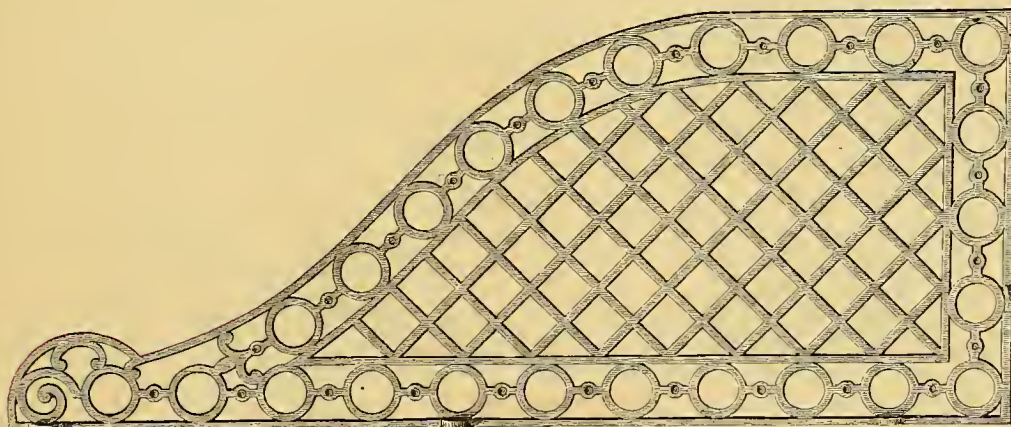
Is made by bolting together two Quarter Circle Racks. Length across top, 4 feet 1 inch. Height 2 feet 4 inches.

STALL PARTITION.



6 feet long. 2 feet 4 inches wide.

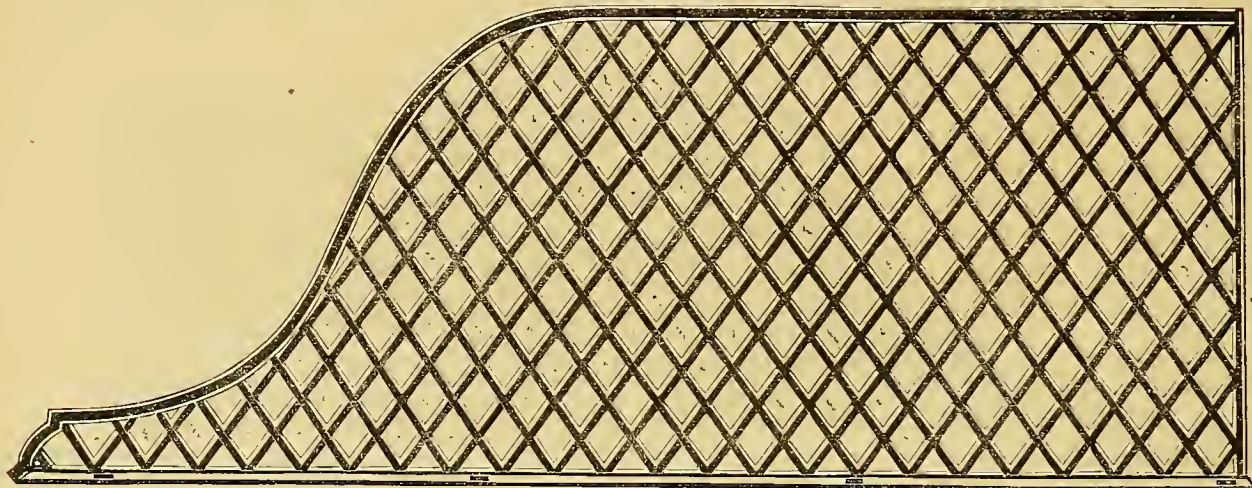
STALL PARTITION.



6 feet long. 2 feet 6 inches wide.

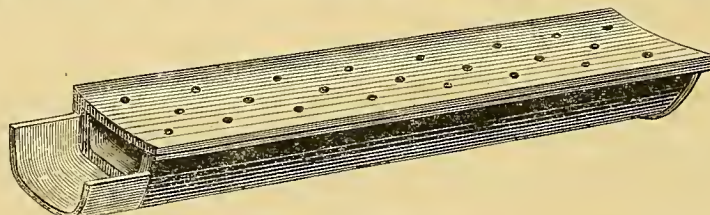
The J. L. Mott Iron Works.

STALL PARTITION.



7 feet long. 2 feet 8 inches wide.

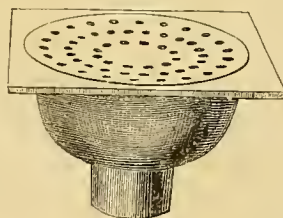
STABLE GUTTER AND COVER.



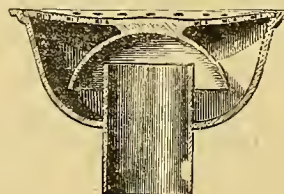
In pieces 3 feet long, 7 inches wide, 2 inches deep.

Can be used in connection with Cesspools for a range of Stalls as seen in cut of Mott's New Pattern Manger Page. Branches cast on lengths of Gutter to order.

STABLE CESSPOOL



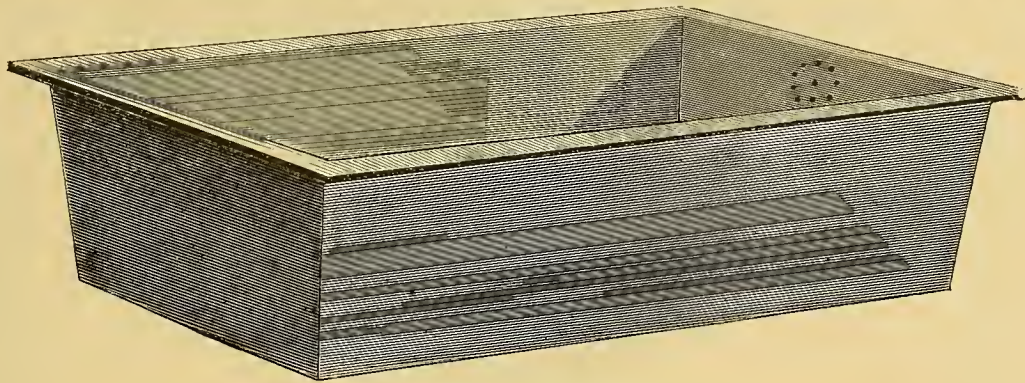
Sectional Cut of Stable Cesspool.



WITH BELL TRAP.

Can be used in connection with 4 inch Cast Iron Soil Pipe.

STABLE SINK OR HORSE TROUGH.



PLAIN OR GALVANIZED.

With or without Overflow, and Open or Plug Strainer.

WITHOUT OVERFLOW.

20 x 14 x 12.

24 x 20 x 12.

36 x 21 x 12.

48 x 20 x 17.

WITH OVERFLOW.

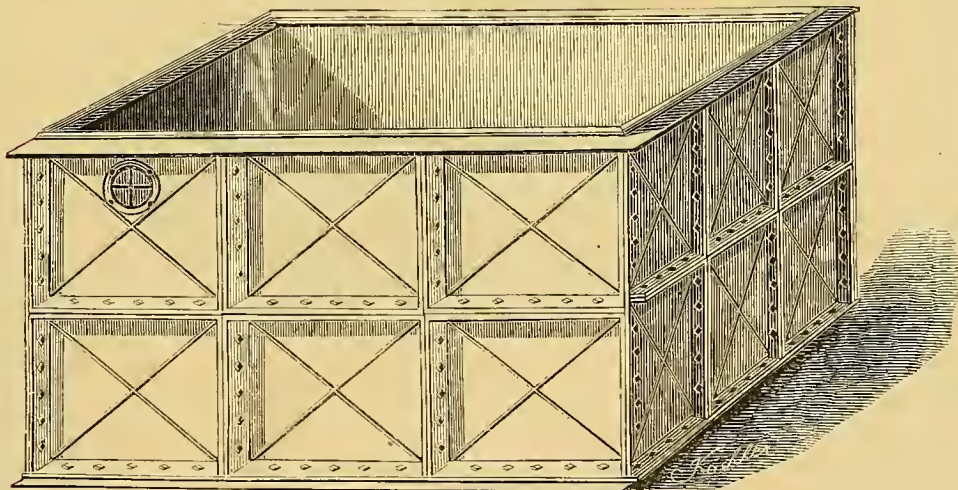
20 x 14 x 12.

24 x 20 x 12.

36 x 21 x 12.

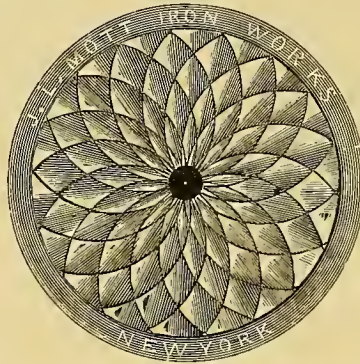
48 x 20 x 17.

CAST IRON TANKS.

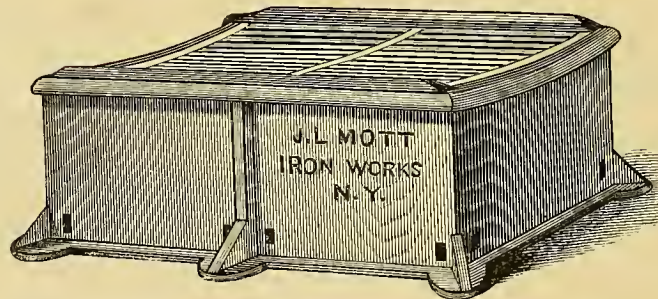


PLAIN OR GALVANIZED.

Made in sections, each Plate 18 inches square; can be made any size the above Plates will admit of. They are decidedly better than either Lead or Wood. Prices for any given size furnished or sent by mail on application.

VAULT COVER.

Diameter 17 inches.

ROAD AND WALK BOXES.

TWO SIZES.

For Public and Private Parks, Cemeteries, &c., for conveying the surface drainage to Sewers or Culverts. Same as used in the Central Park, N. Y.

No. 1—17 inch long, 9 inch wide, 8 inch deep. No. 2—25 inch long, 14 inch wide, 10 inch deep.

NEW PATTERN LAMP POSTS.

THESE ENGRAVINGS SHOW OUR NEW

LAMP POSTS,

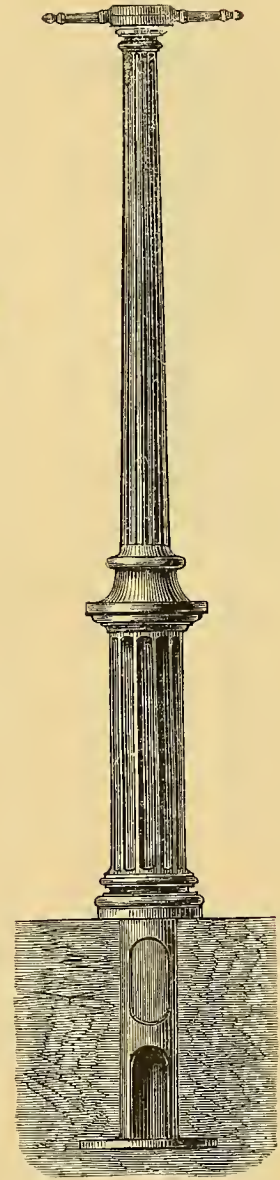
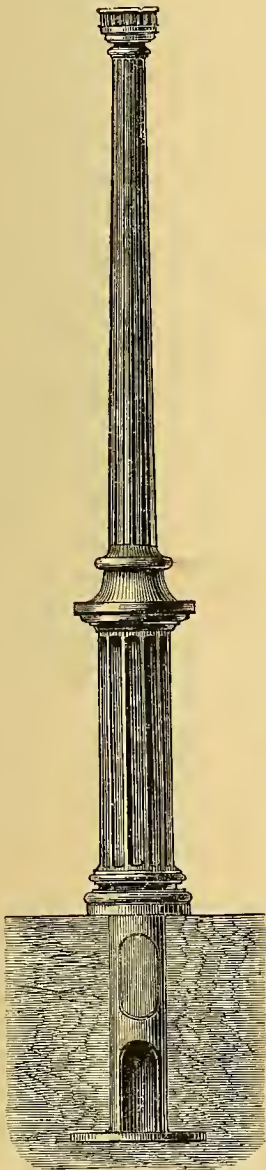
WITH CAP AND CROSS BAR.

—:o:—

The Ladder may be dispensed with, as the large concave Cap on top of the lower section forms a convenient step for the Lamp-Lighter to stand upon.

—:o:—

Prices furnished on application, for Posts, with or without Frames and Lanterns.



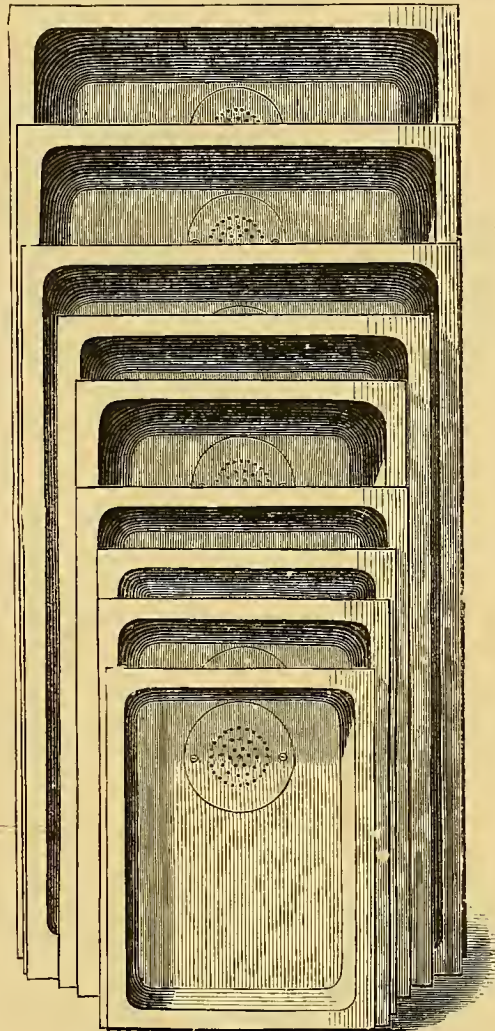
HITCHING POSTS.*WITH EAGLE HEAD.*

There is nothing about this Post that can hurt a Horse. From ground to Ring in top of Post, 42 inches high.

***HITCHING POST.****RUSTIC PATTERN.****CAST IRON LEADER PIPE.***

3, 4, 5 & 6 INCH.

SQUARE SINKS.

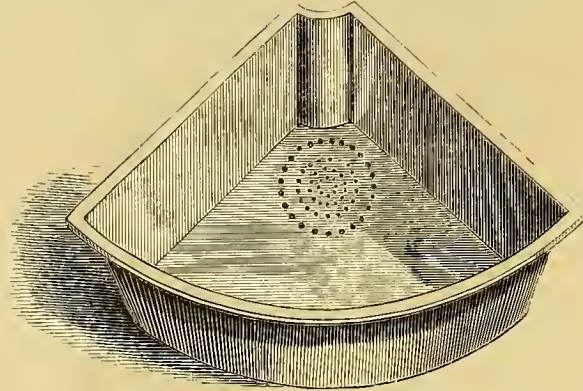


PLAIN, GALVANIZED & ENAMELED.

16½ x 12½	4½ in. deep.	28 x 17	6 in. deep.	30 x 24	8 in. deep.
18 x 12	6 "	28 x 20	6 "	50 x 24	6½ "
20 x 14	4½ "	30 x 16	6 "	50 x 26	6½ "
22 x 14	5 "	30 x 18	6 "	76 x 22	7 "
23 x 15	5 "	30 x 20	6 "	62 x 22	8 "
24½ x 16	5 "	32½ x 18	6 "	56 x 32	9 "
25½ x 15½	5 "	32½ x 21	6 "	78 x 28	10 "
20 x 12½	6 "	36 x 18	6 "	20 x 14	12 "
20 x 14	6 "	36 x 21½	6 "	22 x 20	12 "
24½ x 16	6 "	38 x 20	6 "	24 x 20	12 "
24 x 18	6 "	42 x 22	6 "	36 x 21	12 "
25½ x 17½	5 "	48 x 20	6 "	48 x 20	17 "
27 x 15	5 "	48 x 23	6 "	94 x 24	10 "
24 x 20	6 "				

The J. L. Mott Iron Works.

CORNER SINKS.

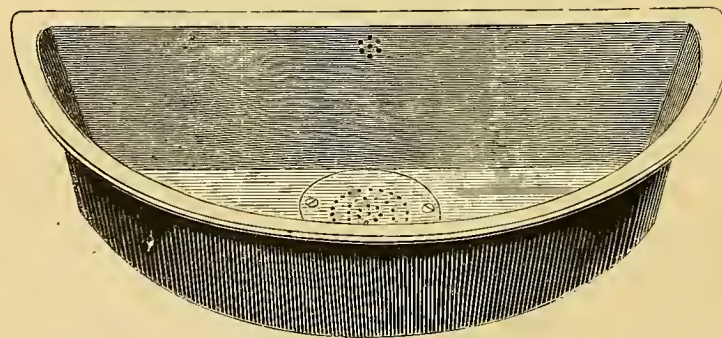


PLAIN, GALVANIZED & ENAMELED.

SIDE.	FRONT.	DEPTH.	SIDE.	FRONT.	DEPTH.
No. 1, 17 inch.	25 inch.	4½ inch.	No. 3, 22 inch.	31 inch.	6½ inch.
No. 2, 20 inch.	28 inch.	6 inch.	No. 4, 18½ inch.	25 inch.	12 inch.

HALF CIRCLE SINKS.

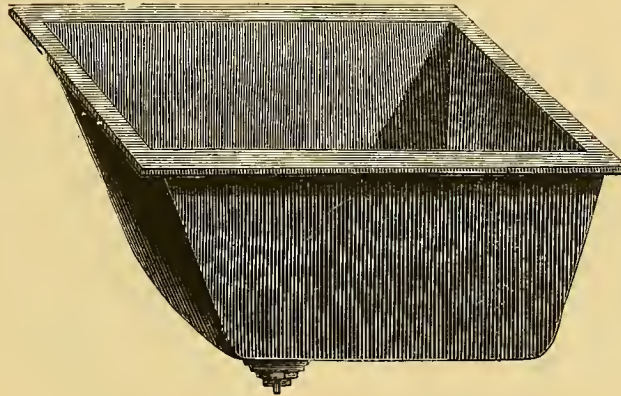
No. 3.



PLAIN, GALVANIZED & ENAMELED.

BACK.	WIDTH.	DEPTH.	BACK.	WIDTH.	DEPTH.
No. 1, 24 inch.	14 inch.	6 inch.	No. 3, 28 inch.	16 inch.	8 inch.
No. 2, 27 inch.	14 inch.	6 inch.	No. 4, 31½ inch.	17 inch.	6 inch.

SLOP SINKS.



PLAIN, GALVANIZED & ENAMELED.

16 x 16. 10 inch deep.
20 x 14. 12 " "
20 x 16. 12 " "

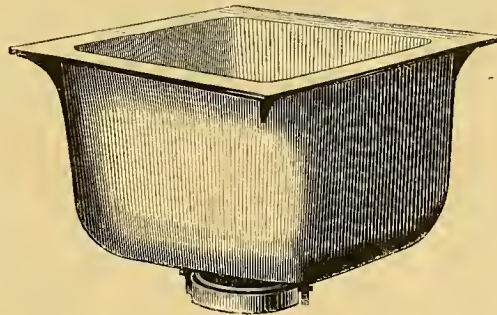
22 x 20. 12 inch deep.
24 x 20. 12 " "
23 x 15. 15 " "

36 x 21. 12 inch deep.
48 x 20. 17 " "

CORNER SINK—18½ x 25. 12 inch deep.

SLOP SINK.

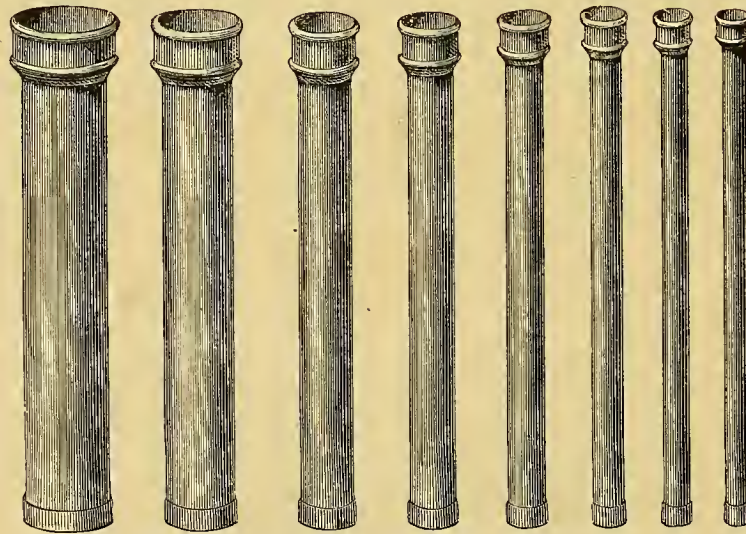
WITH 4 INCH OUTLET.



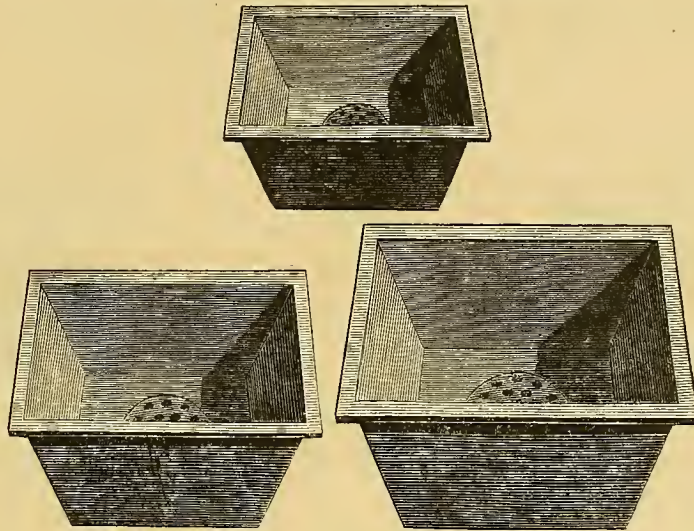
PLAIN, GALVANIZED & ENAMELED.

22 inches long, 20 inches wide, 12 inches deep.

CAST IRON

DRAIN, WATER & SMOKE PIPES,*IN FIVE FOOT LENGTHS.**2, 3, 4, 5, 6, 7, 8, 10 & 12 INCH.*

CESSPOOLS.



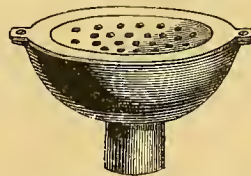
TO PLACE IN FRONT OF HYDRANTS.

12 x 12. 6 inch deep.

14 x 14. 6 inch deep.

16 x 16. 6 inch deep.

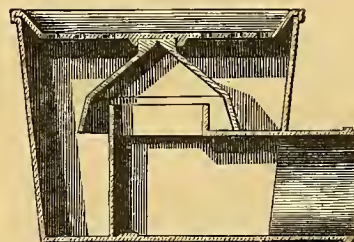
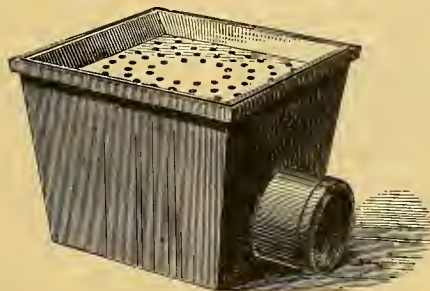
PLAIN CESSPOOL.



FOR YARDS OR AREAS.

Diameter on Top, 13 inches.

LARGE OPEN TOP CESSPOOL.



Sectional Cut.

WITH BELL TRAP.

Designed for Drains of Country Houses, 13 inches square.

LARGE CESSPOOLS.

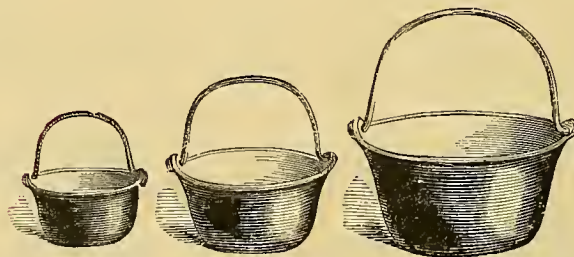


WITH BELL TRAP & GRATING.

For Yards, Areas and Stables.

SOLDER POTS.

No. 21.

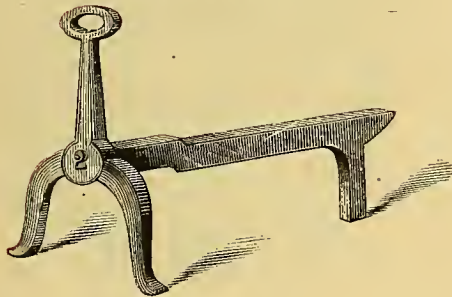


No. 1.	5 inch diameter on top.
" 2.	6 " " "
" 3.	6½ " " "
" 4.	8 " " "

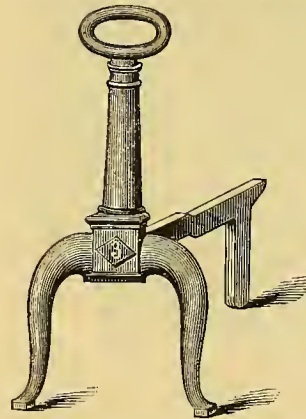
No. 5.	9 inch diameter on top.
" 6.	10½ " " "
" 7.	13½ " " "

FIRE DOGS.

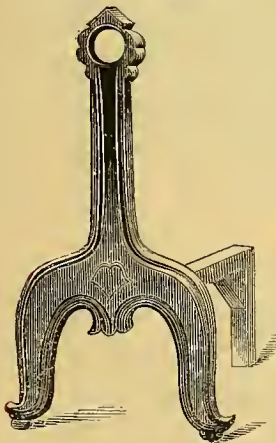
HEAVY SOLID.



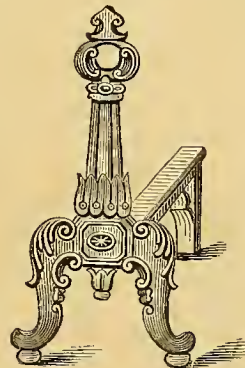
SOLID JOINT JAPANED.



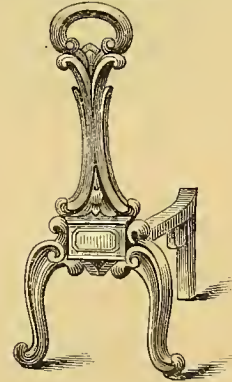
HEAVY LOOSE JOINT.



FANCY JAPANED LOOSE JOINT.



RING TOP LOOSE JOINT BRONZED.

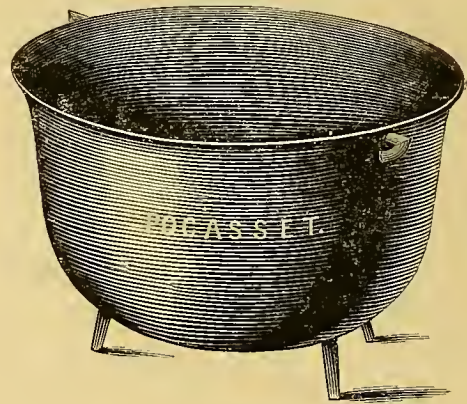


SOUTHERN HOLLOW-WARE.

POTS.



NEW PATTERN WASH KETTLES.



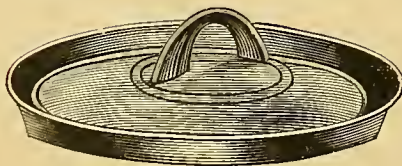
OVAL OVENS AND LIDS.



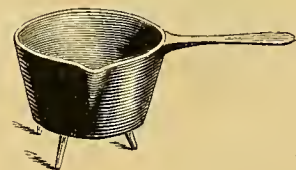
DEEP OVENS AND LIDS.



EXTRA LIDS.



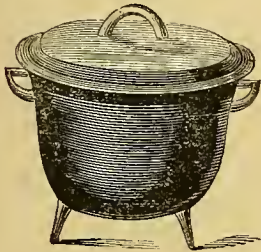
LIPPED SKILLETS.



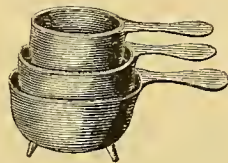
SOUTHERN HOLLOW-WARE.

CONTINUED.

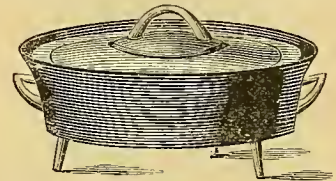
FRENCH POTS, OR POTATOE STEAMERS.



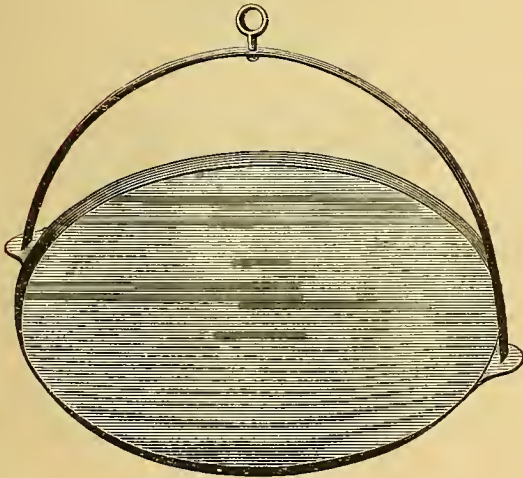
DEEP SKILLET.



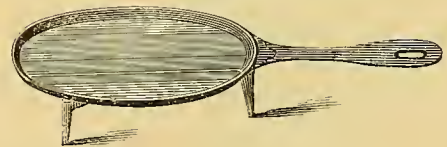
SHALLOW OVENS AND LIDS.



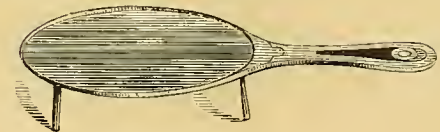
ROUND GRIDDLES, WITH BAILS.



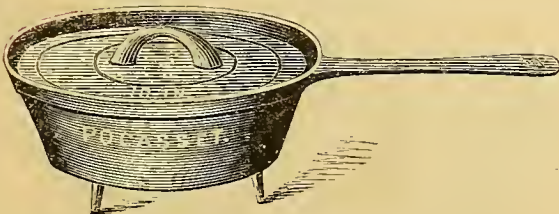
REVOLVING ROUND GRIDDLES, WITH HANDLES & LEGS.



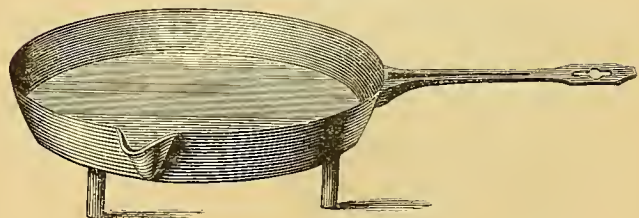
LONG HANDLED GRIDDLES, WITH LEGS.



SHALLOW SPIDERS AND LIDS.



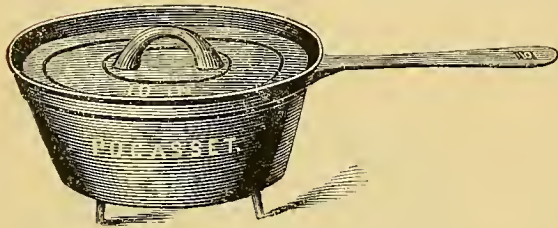
LIPPED SPIDERS.



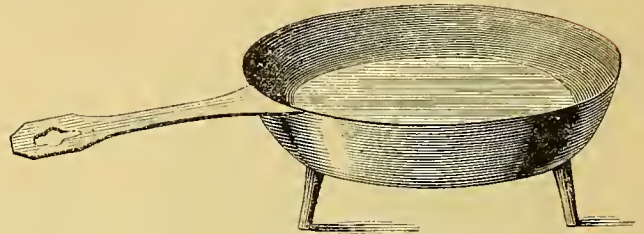
SOUTHERN HOLLOW-WARE.

CONTINUED.

DEEP SPIDERS AND LIDS.

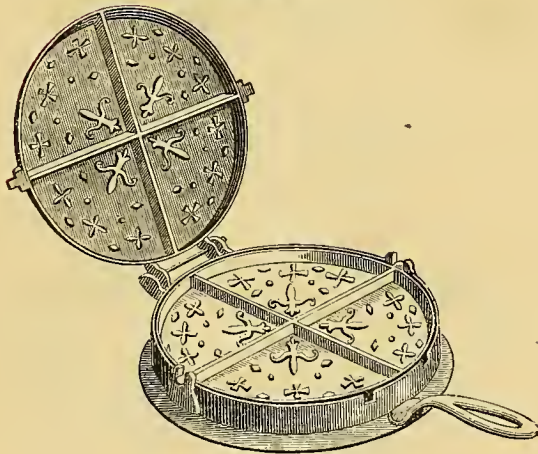


COMMON SPIDERS.

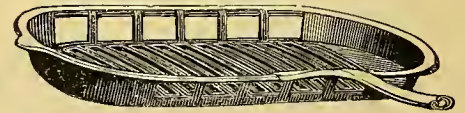


STOVE HOLLOW-WARE.

WAFFLE IRON.



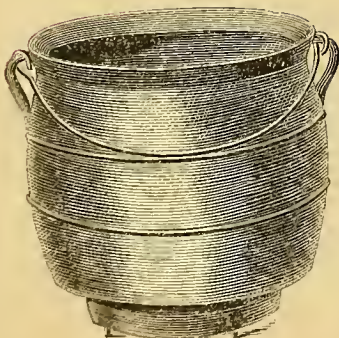
GRIDIRON



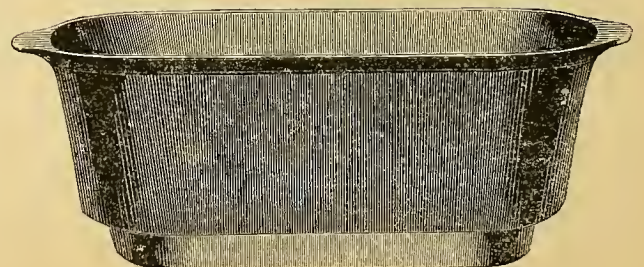
SPIDER.



POT.



HAM BOILER.



STOVE HOLLOW-WARE.

CONTINUED.

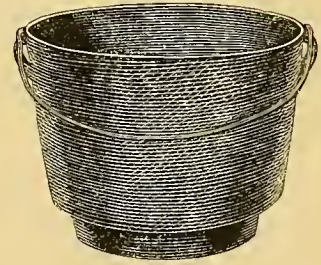
TEA KETTLE.



FLAT-BOTTOM TEA KETTLE.



KETTLE.

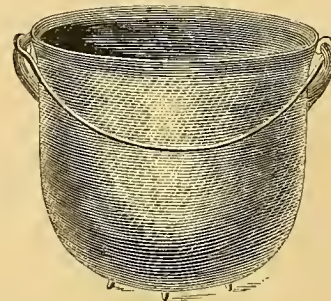


ROUND BOTTOM STOVE HOLLOW-WARE.

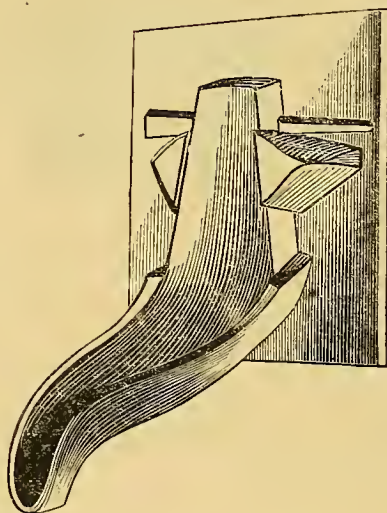
ROUND BOTTOM POT.



ROUND BOTTOM KETTLE.



A. L. FINCH'S

PATENT STOVE LEG.

We have purchased the right to manufacture A. L. FINCH'S Patent Stove Leg, to prevent legs from falling out, and intend to apply it to our Stoves during the coming season.

ESTABLISHED 1828.

THE J. L. MOTT IRON WORKS,

Manufacturers of

STOVES, RANGES,

FARMER'S BOILERS, CAST-IRON PIPE,

SINKS, WASHSTANDS,

PLAIN, ENAMELED AND GALVANIZED.

VASES, STATUARY,

GARDEN ORNAMENTS,

IN GREAT VARIETY.

CAST-IRON STABLE FITTINGS.

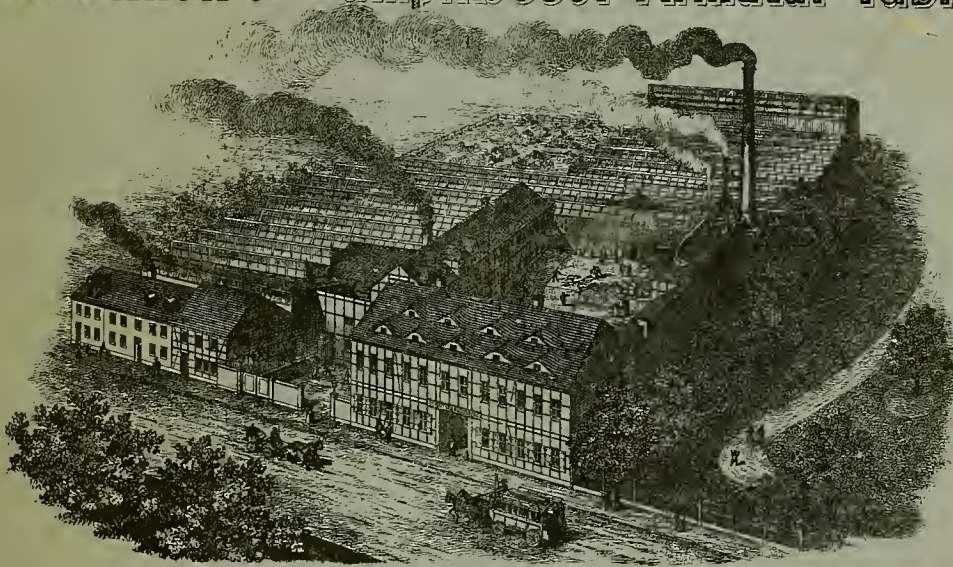
St. George Building, 90 Beekman St.

CORNER CLIFF, NEW-YORK.

Illustrirtes Preis-Verzeichniss.

Januar 1870.

Maschinen- & Dampfkessel-Armatur-Fabrik



von
SCHÄFFER & BUDENBERG
in
Buckau-Magdeburg.

MANCHESTER, GLASGOW,
23. Lower King-Street. 202. Hope Street.



General-Depôt in PRAG, in WIEN,
655. Elisabethstrasse. 10. Opernring.

General-Depôt in MOSKAU
bei C. TOLCH
Grosse Bronnaja Haus Maikowa.

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,

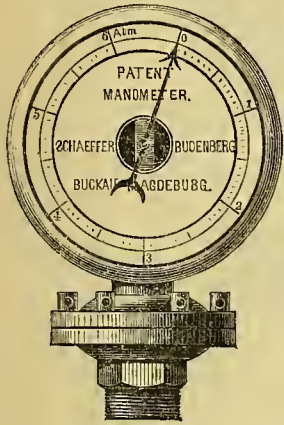
Lower Kingstr. 23.

Hopestr. 202.

Elisabethstr. 655-1.

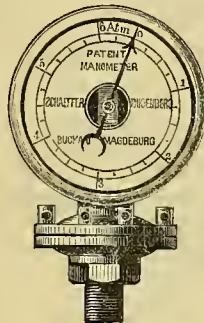
Opernring 10.

Fig. 1.



6" Scala.

Fig. 1a.



4" Scala.

Fig. 1b.



3" Scala.

Fig. 1c.



2" Scala.

Fig. 1f.



1 1/2" Scala.

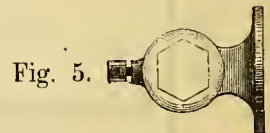


Fig. 5.

Fig. 2.

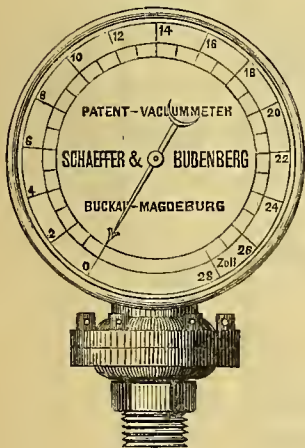


Fig. 6a.

Fig. 1d.

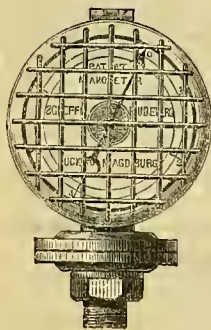
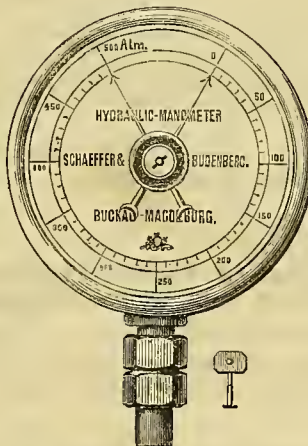


Fig. 7a.

Fig. 4.



Hydraulic-Manometer.

Fig. 1e.

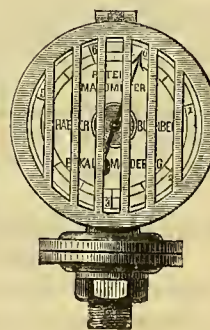
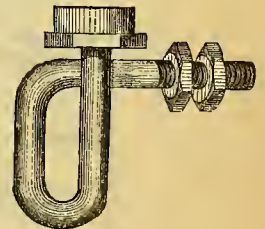
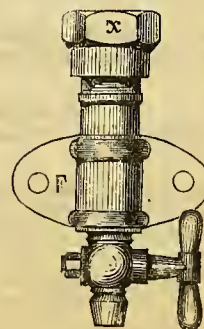
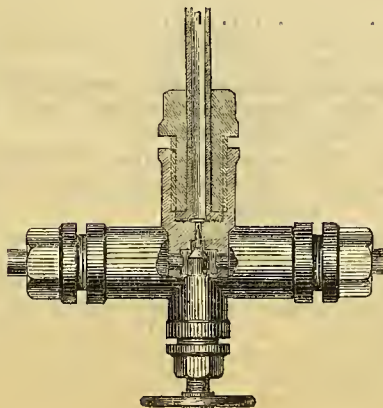
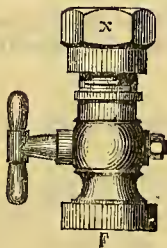
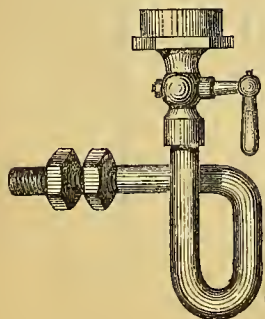


Fig. 7b.

Fig. 3.



Fig. 6.



Patent-Feder-Manometer mit gewellter Stahlplatte, nebst Zubehör.

Bemerkungen zu den Patent-Feder-Manometern sub Tafel I.

Diese Manometer eignen sich ganz vorzüglich zur Messung des Druckes in Druckerzeugern aller Art, für Dampf-, Wasser- und Luftdruck, und werden dieselben in den nachstehend aufgeführten Grössen zu den dabei angedeuteten speciellen Zwecken, bis 20 Atmosphären Ueberdruck ausgeführt.

Fig.	Diameter der Scala.		Nähere Bezeichnung.	Preise.	
	Zoll.	Mm.		Gewöhnliche Ausführung.	Ganz Metall.
				Thaler.	Thaler.
1	6	157	Patent-Dampfmanometer für stationäre Kessel und Locomotiven	12	15
"	"	"	" " " " " " " " mit Maximumzeiger	14	17
"	"	"	" " " " " " " " mit Maximum- und Minimumzeiger	15	18
"	"	"	" " " " " " " " mit 2 Zifferblättern, das vordere dem Heizer sichtbar, das hintere dem Heizer unsichtbar und verschlossen, beide mit Maximumzeiger	20	22
1a.	4	104	Patent-Dampfmanometer für Locomobilen	10	12½
1d.	"	"	" " " " " " " " mit Drathdeckel zum Schutz des Deckglases	11	13½
1e.	"	"	" " " " " " " " mit Rostdeckel	11	13½
1b.	3	78	Patent-Manometer für Gas- und Kohlensäuredruck, für Mineralwasser-Apparate	8	9
1c.	2	52	" " " " " " " " als Control- (Etalon-) Manometer (vergleiche Tafel 1B.)		8
1f.	1½	39	" " " " " " " " für sehr kleine Maschinen, Modelle etc.		8
1g.	10	252	" " " " " " " " als Übersichtsinstrument	18	
1h.	12	314	" " " " " " " "	24	
1i.	12	314	" " " " " " " " mit transparenter Scala	29	
1k.	18	471	" " " " " " " "	36	
1l.	18	471	" " " " " " " " mit transparenter Scala	44	
2	6	157	Patent-Vacuummeter , zur Messung der Luft-Verdünnung in Vacuum-Apparaten und Condensatoren, Eintheilung der Scala in 1 Atmosphäre, oder von 0—28" par., oder von 0—30" engl., oder von 0—76 Ctm., je nach Bestimmung	12	15
3	6	157	Gebälse-Manometer , zur Messung des Drucks der durch Gebläse comprimirt Luft. — Bei Bestellung ist die Maximalhöhe des wirkenden Druckes anzugeben.	12	15
			Allgemeine Bemerkungen. Bei Bestellung der Patent-Manometer empfiehlt es sich, dass die Eintheilung stets möglichst doppelt so hoch genommen werde, als der effective Druck im Druckerzeuger, da dadurch die Beständigkeit der Plattenfeder für die Inanspruchnahme wächst. — Die Plattenfeder ist durch Ueberzug geschützt. Ueber 20 Atmosphären hinaus werden die Plattenfeder-Manometer nicht gefertigt und muss für höheren Druck die Construction der Hydraulic-Manometer in Anwendung gebracht werden.		
4	9	235	Patent-Hydraulic-Manometer , eigener Construction, mit Stahlrohr nach Art der Schinz'schen Röhre von 25 Atm. bis 2000 Atm.		30
"	6	157	Dasselbe.		25
			Theile zur Befestigung der Patent-Feder-Manometer und Verbindung derselben mit dem Druckerzeuger.		
5			Stativ für 6" Manometer im Grundriss dargestellt.	½	
6			Gebogenes S-Rohr , wassersackbildend und so die Plattenfeder vor Ueberhitzung schützend, zugleich zur soliden Befestigung mit dem Dampferzeuger dienend. ohne Hahn	2	
6a.			Dasselbe. mit Hahn	3½	
7a.			Untersatzhahn, auf dem Kessel , gegen Ueberhitzung und gegen das Einfrieren, zugleich zur soliden Verbindung mit dem Druckerzeuger für Manometer 6" Scala, in Eisen.	4	5
			Derselbe	3	4
7b.			Derselbe, vor dem Kessel	4	5
			Derselbe, do.	3	4
			Die Verbindung des Hahnes mit dem Kessel geschieht mittelst Flansch F., die des Hahnes mit dem Manometer mittelst Differential-Mutter x.		
			Jedem 6" Patent-Manometer wird ohne besondere Bestellung und Berechnung beigegeben ein Kupferröhrchen mit Ueberwurfmutter und ein Stativ.		
			Jedem 4" Manometer eine Mutter.		
			Jedem Hydraulic-Manometer eine Mutter zum Einschrauben oder Einlöthen.		
8			Kreuzkupplung für Hydraulic-Manometer mit Absperrvorrichtung, dient zur Einschaltung von Hydraulic-Manometern in einen Rohrstrang und zur Abstellung des Manometers, zugleich aber zum Schutz desselben. Das Hydraulic-Manometer wird mit der Kupplung durch ein möglichst langes Rohr verbunden, der Zugang dazu wird durch eine Pressabsperrschraube mit langem Conus möglichst verengt, so dass die Druckmittheilung aus dem Hauptstrang nicht plötzlich, sondern successive erfolgt und Stösse parirt und gemildert werden, wodurch die Haltbarkeit der Hydraulic-Manometerfeder und des Triebwerks bedeutend erhöht wird. Durch die Absperrungseinrichtung wird der horizontale Durchgang der Kupplung nicht verengt.		10

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,

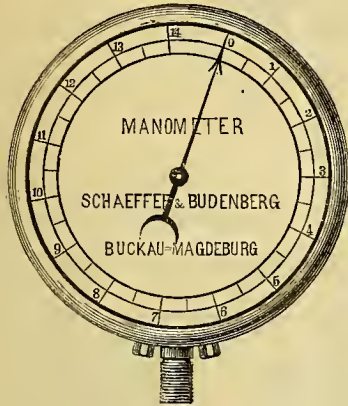
Lower Kingstr. 23.

Hopestr. 202

Elisabethstr. 655-1.

Opernring 10.

Fig. 1.



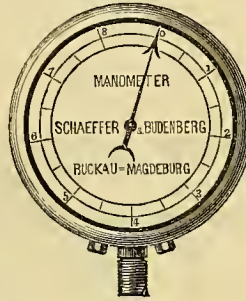
7" Scala.

Fig. 2.



6" Scala.

Fig. 3.



5" Scala.

Fig. 4.



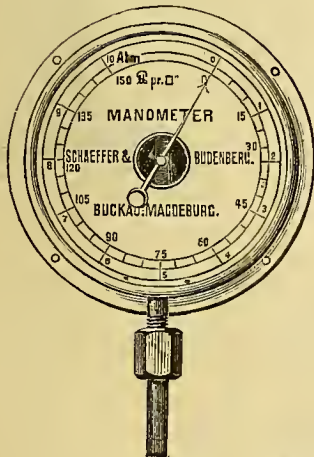
4" Scala.

Fig. 5.



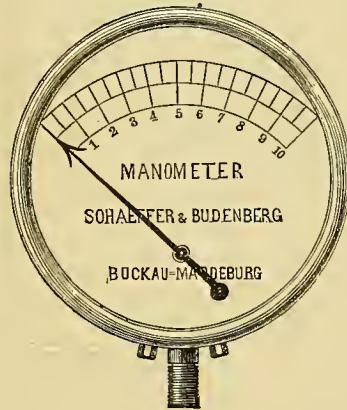
3" Scala.

Fig. 6.



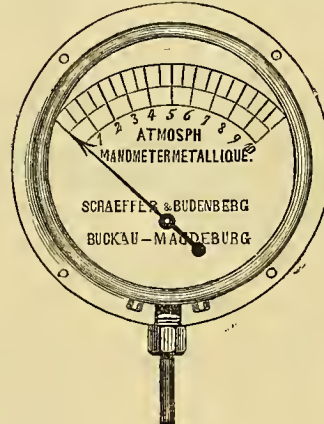
7", 6", 5", 4", 3" Scala.

Fig. 7.



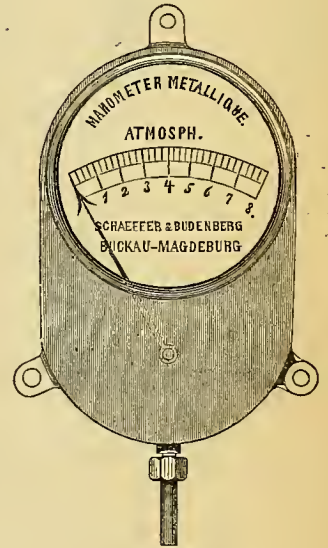
7", 6", 5", 4", 3" Scala.

Fig. 8.



7", 6", 5", 4", 3" Scala.

Fig. 9.



5" Scala.

Fig. 10.



Feder-Manometer, mit gebogener Schinz'scher (Bourdon-) Röhre. aus hartgezogener Metall-Composition.

Bemerkungen

zu den

Feder-Manometern

mit gebogener Schinz'scher (Bourdon-) Röhre, aus hart gezogener Metallcomposition, sub Tafel IA.

PREIS-VERZEICHNISS.

Diameter der Scala. Zoll. | Millim.		Figur 1—5 ohne Rand.	Figur 6 mit Rand.	Mit excentrischem Zeiger.			Fig. 10.		Thlr.	
				Figur 7 ohne Rand.	Figur 8 mit Rand.	Figur 9 mit Eisen- gehäuse.	als Absperr- hahn.	als Etalon- oder Controlhahn		
"	7	183	18	18	17	17		2	3	"
"	6	157	13	13	12	12		2	3	"
"	5	131	12	12	11	11	10	2	3	"
"	4	104	11	11	10	10		2	3	"
"	3	78	9	9	8	8		2	3	"

Der Absperrhahn, Fig. 10, wird nur auf extra Bestellung beigegeben; für gewöhnlich erhält das Manometer Ueberwurfmutter nebst Röhren beigefügt, wie in Fig. 6, 8 und 9 angedeutet.

Der Absperrhahn kann event. auch Control- oder Etalon-Hahn, wie auf Tafel IB. angegeben, sein, und die Vorsichtsmassregeln von Tafel I. für Befestigung und zum Schutz gegen Ueberhitzung und gegen Einfrieren finden hier dieselbe Bedeutung.

Diese Manometer, mit Ausnahme von Fig. 9 ganz in Metall ausgeführt, eignen sich aus diesem Grunde ganz vorzüglich als Schiffsmannometer und werden in den Grössen bis inclusive 4" Scala, auch als Vacuummeter, Eintheilung in Atmosphären oder von 0—28" paris., oder von 0—29" preuss., oder von 0—30" engl., oder von 0—76 Ctm., je nach Bestellung, zu obigen Preisen ausgeführt.

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,

Lower Kingstr. 23.

Hopestr. 202.

Elisabethstr. 655-1.

Opernring 10.

Control-Feder-Manometer, Controlhähne u. s. w. nebst Zubehör.

Fig. 3.

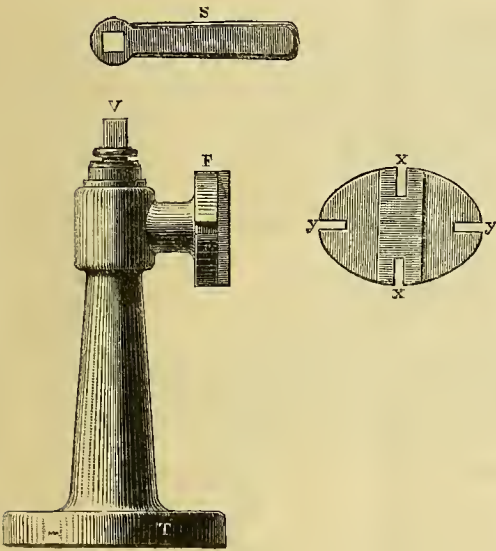


Fig. 1.

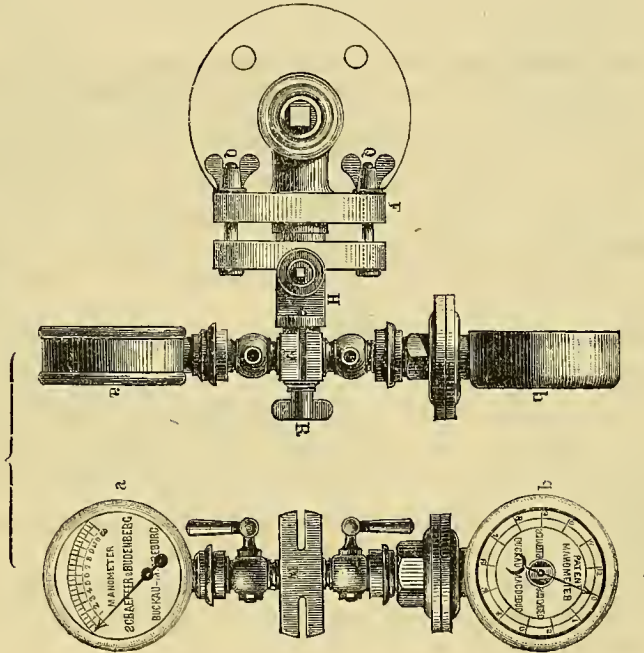


Fig. 2.

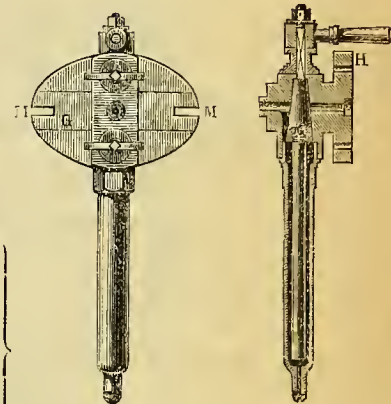


Fig. 4.

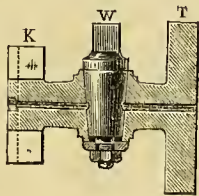


Fig. 5.

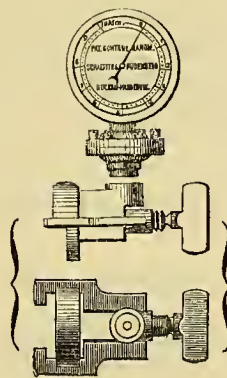


Fig. 12.



Fig. 6.



Fig. 7.



Fig. 8.



Fig. 9.

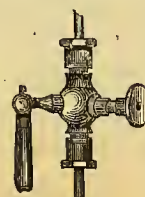


Fig. 10.



Fig. 11.



Bemerkungen zu den Control-Feder-Manometern, Controlhähnen nebst Zubehör etc.

sub Tafel I B.

Zur Controle der sich in Thätigkeit befindenden Feder-Manometer dient für stationaire Kessel meist nur ein Quecksilber-Manometer, offen natürl. Scala; bequemer und namentlich unter der Möglichkeit, auch zu Zeiten das Quecksilber-Manometer als Control-Manometer benutzen zu können, sind folgende Einrichtungen, welche bereits stellenweise gesetzliche Kraft erlangt haben.

Feder-Manometer, in kleiner, leicht transportabler Gestalt und vorzüglicher Ausführung, zum Gebrauch für Baubeamte, Kesselrevisoren, oder für den eignen Gebrauch, welche für gewöhnlich sich nicht in Thätigkeit befinden und nur zeitweise, mit den zu prüfenden Feder-Manometern, direct oder indirect in Verbindung gebracht werden. Neben dem Control-Manometer sind daher auch noch Theile erforderlich, um das Control-Manometer mit dem Kessel etc. oder dem zu untersuchenden Manometer direct zu verbinden, gelegentlich bei einzelnen Einrichtungen auch noch den Vergleich mit einem offenen Quecksilber-Manometer zuzulassen.

Der Verein zur Beförderung des Gewerbefleisses in Preussen schlägt 1867, um die Controle durch Quecksilber-Manometer vollkommen überflüssig zu machen, folgende Einrichtungen vor:

Fig. 1. in Ansicht und Grundriss dargestellt, ein **Doppel-Control-Manometer**, complett mit Manometer-Träger und Schutzhahn, von dem Grundsatz ausgehend, dass, so lange Uebereinstimmung zwischen beiden Control-Feder-Manometern herrsche, beide als richtig anzusehen seien. Der Verein für Gewerbefleiss in Preussen schlägt 2 gleich construirte Manometer mit Schinz'scher oder Bourdonröhre vor, wir schlagen abweichend davon ein Manometer mit Bourdonfeder *b* und eines Construction Schäffer *a* vor. Zur Verbindung beider, je mit Absperrhahn versehen, dient das Zwischenstück *M*, mit geschlitztem Flantsch, um mittelst Schrauben und Flügelmuttern *R* dieses mit einen —

Fig. 2. in Ansicht und Durchschnitt dargestellten, **Wassersack bildenden Schutzhahn**, und das Ganze mit dem auf dem Kessel zu befestigenden —

Fig. 3. **Manometerträger**, der ebenfalls geschlitzten Verbindungsflantsch *F* und Absperrhahn *V*, sowie Schlüssel *S* besitzt, oder dem vor dem Kessel zu befestigenden —

Fig. 4. **Manometerträgerhahn** zu verbinden, der gleichfalls dieselben Anschlüsse wie Fig. 3 besitzt.

Die sehr bequeme und ganz practische, von Schäffer & Budenberg schon 1858 angegebene Einrichtung, im Reg.-Bez. Magdeburg s. Z. gesetzl. eingeführt, ist in

Fig. 5. einem **Control-Feder-Manometer, 2" Scala**, nebst Verbindungsstück und Schraubzwinge, zum schnellen Anschrauben an einen Controlflantsch, wie in Fig. 6 und 9, gegeben; selbstredend können auch grösser scalarte Manometer dazu verwendet werden.

In anderen Staaten resp. Ländern sind bezüglich der zur Controle kommenden Feder-Manometer, Hähne mit anderen Controltheilen zur Befestigung des pp. Control-Manometers vorgeschrieben und zwar für Oesterreich Dreiweghähne, in einen $\frac{3}{4}$ " Withworth-Gewindezapfen endigend, wie in Fig. 7 und 10 gegeben; für Sachsen ist der Controlhahn mit Muffe und $\frac{1}{2}$ " Withworth-Innengewinde vorgeschrieben. Diese Controlhähne können z. B. gleich unter dem Feder-Manometer an Stelle des sub Tafel I. Fig. 6a gegebenen Hahnes, Verwendung finden. Die sub Tafel I. Fig. 7a und 7b angegebenen Untersatzhähne in Metall werden auf Verlangen auch mit den entsprechenden Controltheilen versehen geliefert, und in diesem Falle 1 Thlr. extra berechnet.

PREIS-VERZEICHNISS.

Nach Vorschrift des Vereins zur Beförderung des Gewerbefleisses in Preussen.	Fig. 1.	Doppel-Control-Manometer , bestehend aus zwei 3" Scala = 78 Millim. Feder-Manometern, einem Princip Bourdon, und einem Princip Schäffer... à 9 Thlr. nebst Verbindungsstück mit Absperrhähnen <i>M</i>	} 18 Thlr. 5 " 7 " 5 " 5 " 8 " 4 "
	" 2.	Wassersack bildender Schutzhahn dazu	
	" 3.	Manometerträger mit Absperrhahn , auf dem Kessel	
	" 4.	derselbe vor dem Kessel	
Zur directen Verbindung mit dem Feder-Manometer.	" 5.	Eleganter Kasten dazu , zum Transportiren.....	5 "
	" 6.	Control-Manometer 2" \ominus = 52 Millim. Scala, Construction Schäffer	8 "
	" 7.	Verbindungsstück mit Schraubzwinge dazu	4 "
Zur Einschaltung in ein Rohrsystem.	" 8.	Control-Dreiweghahn mit Control-Flantsch nach Preuss. Gesetz	} à 3 "
	" 9.	do. mit $\frac{3}{4}$ " Withw. Gewindezapfen nach Oesterreich. Gesetz	
	" 10.	do. mit $\frac{1}{2}$ " Withw. Innengewinde nach Sächs. Gesetz	
	" 11.	do. mit $\frac{3}{4}$ " Withw. Gewindezapfen nach Oesterreich. Gesetz.....	
	" 12.	do. mit $\frac{1}{2}$ " Withw. Innengewinde nach Sächs. Gesetz	
	" 12.	Gewöhnlicher Manometer-Absperrhahn zu div. Zwecken, ca. $\frac{1}{4}$ " Bohrung, mit $2\frac{1}{8}$ " \ominus Flantsch = 55 Millim. Diam.	1 $\frac{1}{2}$ "

NB. In unseitigen Figuren sind, um das Zurechtfinden zu erleichtern, gleiche oder correspondirende Theile mit gleichen Buchstaben bezeichnet.

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,

Lower Kingstr. 23.

Hopestr. 202.

Elisabethstr. 655-1.

Opernring 10.

Fig. 1.

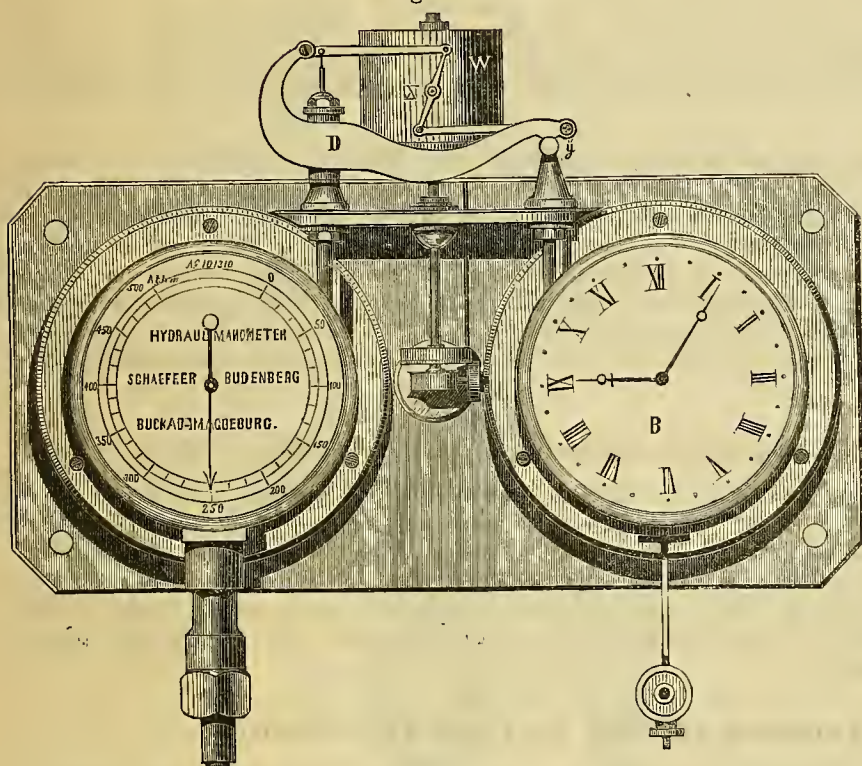


Fig. 2.

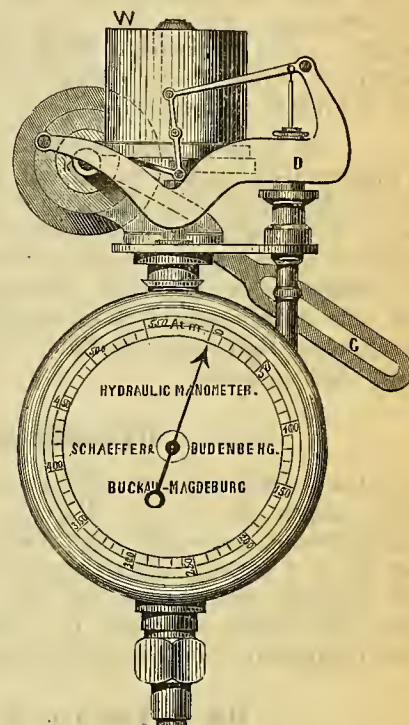
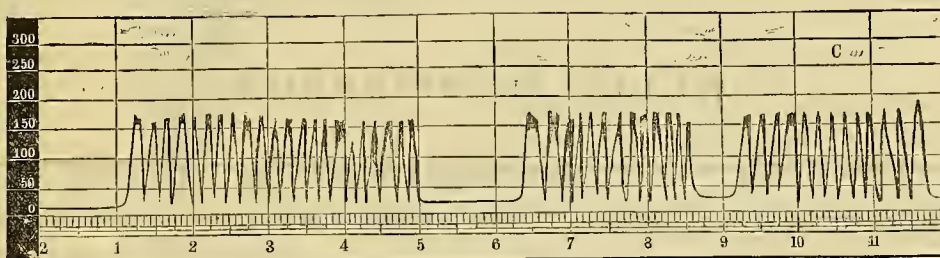


Fig. 3.



Feder-Manometer

mit graphischer Darstellung des Druckes.

Manometer mit graphischer Darstellung sind in der Praxis vielfach mit Erfolg anwendbar, als Pat. Feder-Manometer bieten sie eine sehr willkommene Controle über das Verhalten des Dampfes in Dampfkesseln, als Patent Hydraulic-Manometer eine äusserst zuverlässige Controle über den Gang Hydraul. Pressen etc., wie weiter unten auseinandergesetzt.

Fig. 1. Hydraulic-Manometer mit graphischer Darstellung des Druckes unter Angabe der Zeit.

Dieses Instrument eignet sich vorzüglich zur Controle Hydraulischer Pressen und der damit verrichteten Arbeit. Es ist in doppelter Weise wirksam, indem es einmal den Druck wie gewöhnlich mittelst Zeiger auf der Scala anzeigt, und andererseits denselben unter Angabe der Zeit graphisch darstellt. Ausserdem besitzt es die angenehme Beigabe einer Stundenuhr.

Es besteht also aus dem Hydraulic-Manometer und einer Stundenuhr B, nebst einer Einrichtung, den Druck graphisch zu markiren. Zu letzterem Zweck ist die Walze W angeordnet, welche sich durch Räderübertragung von der Uhr B her, conform dem grossen Zeiger der Uhr, in 12 Stunden einmal herumbewegt. — Die Walze wird für den Gebrauch mit Papier umspannt und ist für diesen Zweck bequem von der sie tragenden Welle abziehbar. Bei D ist auf eine kleine Säule ein zweiarmiges Stück aufgesetzt, welches die Aufhängepunkte zweier Gegenlenker hergiebt, die den in der Mitte der Hängeschiene angebrachten Zeichenstift X senkrecht auf- und abwärts zu führen bestimmt sind, und die Bewegung, welche der Zeichenstift direct und gleichzeitig wie das Manometer empfängt, so wieder zu geben gestattet. Das zweiarmige Stück D ist leicht an- und abzuheben und die kleine Schraube y dient dazu, diejenige Stellung zu fixiren, welche erforderlich ist, um den Zeichenstift auf der Papier umspannten Walze ohne zu grosse Reibung zum Schreiben zu bringen.

Um diese graphische Darstellung nutzbar und verständlich zu machen, ist das Papier für die Walze W, Bulletin, in Horizontal-Columnen, welche mit dem Druck, und in Vertical-Columnen, welche mit der Zeit correspondiren, eingetheilt. Bei der fortschreitenden Bewegung der Walze und des Zeichenstiftes entsteht nun eine Curve — auf dem Papier — und finden wir in Fig. 3 ein abgewickeltes Bulletin mit Curve in $\frac{1}{2}$ der wirklichen Grösse. Man kann daraus deutlich erkennen die Anzahl und die Druckhöhe der Pressungen, die Dauer derselben, die Dauer für das Steigen und Fallen der Pressungen — (An- und Ablassen) überhaupt markirt sich jede Abnormität im Betrieb — so dass das Manometer eine sehr vollkommene und zu empfehlende Uebersicht über die geleistete Arbeit giebt. Das Ganze kann in einem entsprechenden Glaskasten vor Staub, unbefugten Händen etc. geschützt und aufbewahrt werden, und wird entsprechendes Stativ dazu geliefert.

Fig. 2. Hydraulic-Manometer mit graphischer Darstellung des Druckes ohne Uhr,

also ohne Angabe der Zeit. Bei der hier getroffenen Einrichtung ist die Uhr fortgeblieben und die Bewegung der Walze W erfolgt durch die Pumpe, Maschine oder dergl., indem ein entsprechend sich bewegendes Theil passend mit dem Schlitzhebel g verbunden wird, welcher im Horizontalkreise — der Bequemlichkeit halber — beliebig verdrehbar ist. Der Hebel g bewegt beim Hingang ein Sperrwerk und eine damit verbundene Schraube ohne Ende K, welche letztere in eine Schnecke greift und so die, die Walze W tragende Welle zur Umdrehung zwingt: Der Rückgang des Hebels bewirkt keine Fortdrehung der Walze W. Man kann hier auf dem Bulletin die Drucke per Maschinen resp. Pumpenhub ablesen. Dem Instrument wird gleichfalls Stativ beigegeben.

Die in Fig. 1 u. 2 gegebene Anordnung wird auch für Patent Feder-Manometer

bis 20 Atm. getroffen und unterscheidet sich die äussere Ausrüstung von den gegebenen Abbildungen nur durch die spezifische Verschiedenheit der zur Anwendung gebrachten Manometer.

PREIS - VERZEICHNISS.

Fig. 1.	Hydraulic-Manometer mit graphischer Darstellung des Druckes, unter Angabe der Zeit	} 80 Thlr.
	nebst Stativ	
"	Patent Feder-Manometer " " " " " " "	} 70 "
	nebst Stativ	
Fig. 2.	Hydraulic-Manometer mit graphischer Darstellung des Druckes, ohne Uhr, nebst Stativ	80 "
"	Patent Feder-Manometer " " " " " " do.	70 "
	400 Bulletins dazu.....	5 "

Bei Bestellung ist die Maximalhöhe des wirksamen Druckes anzugeben.

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,

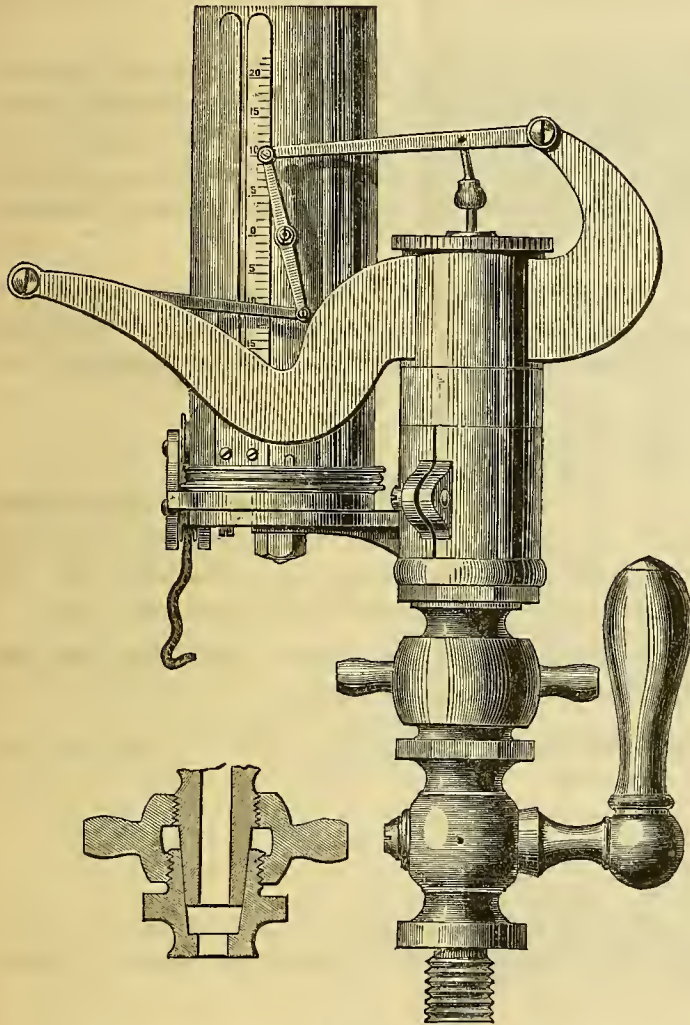
Lower Kingstr. 23.

Hopestr. 202.

Elisabethstr. 655-1.

Opernring 10.

Fig. 1.

**Indicator**

nach Richards.

Dieser Indicator dient zur graphischen Darstellung des Dampfdrucks, der Luftverdünnung und des Gegendrucks in Dampfeylindern sowie der daraus zulässigen Berechnung der Kraftleistung der Dampfmaschinen, gleichzeitig aber auch zur Controle des Ganges derselben resp. der der Steuerungen.*)

Dieses Instrument ist gegen die bis dahin üblichen Indicatoren wesentlich verbessert und verdient daher mit Recht vor allen anderen Indicatoren den Vorzug.

In einer cylindrischen Röhre, die unterhalb mittelst Conus und Differentialmutter mit einem Absperrhahn verbunden wird, welcher letztere die Verbindung mit den Enden eines Dampfeylinders ermöglicht, befindet sich ein kurzes Kolbenrohr mit dampfdicht passendem Kolben von grösserem Querschnitt als bei den bis dahin üblichen Indicatoren und Kolbenstange, die im Deckel der Röhre ihre Führung hat. Der Kolben wird durch eine kurze Schraubenfeder niedergehalten, welche je nach dem vorhandenen Druck, bei welchem der Indicator arbeiten soll, eingerichtet ist, oder leicht gegen eine andere, stärkere oder schwächere Feder, ausgewechselt werden kann. Das obere Ende der Kolbenstange ist mit einer Lenkerstange verbunden, die an ein Parallelogramm angreift und die Bewegung des Kolbens

auf dieses überträgt. Das Parallelogramm hat seine Aufhängepunkte in einem um die cylindrische Röhre drehbaren, mit zwei Armen versehenen Stück und führt in der Mitte der Hängeschiene den Zeichenstift in senkrechter Richtung auf- und abwärts. Das drehbare Stück mit den beiden Armen ermöglicht ein leichtes An- und Abheben des Zeichenstiftes von dem Papier und die vorhin erwähnte Differential-Verschraubung lässt zu, dass der Apparat leicht bei jeder beliebigen Stellung im Kreise fixirt werden kann.

Die Bewegung des Kolbens wird, im Verhältniss der Hebelarme durch das Parallelogramm vergrössert, mit dem Zeichenstift auf einer cylindrischen Walze, die für den Gebrauch mit Papier zu umspannen ist, wiedergegeben. Diese Walze (Papiercylinder) ist einmal um ihre Achse drehbar und mit Feder versehen, welche die Rückdrehung besorgt. An ihrem untern Ende befindet sich ein Schnurkranz zur Aufnahme der Schnur und daneben zwei kleine Leitrollen. Uebrigens kann der Papiercylinder leicht von dem Stativ abgezogen werden und trägt zwei Blechstreifen, welche zum Festklemmen des Papiers dienen und zwei Scalen für zwei verschiedene Federn haben, deren Nullpunkt da liegt, wo der Zeichenstift sich im Zustand der Ruhe befindet.

*) Wir verweisen auf das 1868 im Verlage von R. Gärtner in Berlin erschienene Werkchen: „Der Indicator und seine Anwendung“, welches zum Ladenpreise à 1 Thlr. eleg. geb. bereitwilligst jedem Indicator von uns beigegeben wird.

Dieses Instrument bietet vor allen andern Indicatoren, z. B. dem nach Mac Naught, bedeutende Vorzüge, welche zum Theil schon aus dem Vorhergehenden ersichtlich sind. Die kurze Schraubenfeder ist nicht so wie die bislang angewandte lange schwankende Feder den Stößen und Oscillationen des Kolbens ausgesetzt und arbeitet bei jeder beliebigen Tourenzahl ganz zuverlässig, das entstehende Diagramm ist dadurch ein überaus bestimmtes und sicheres und die gewonnenen Resultate sehr genau und exact. Alle Einrichtungen, den Anfangsstoss möglichst zu paralysiren, wie die nach Kühne, sind hier überflüssig.

Rechnet man dazu das gefällige Aeussere, die saubere Ausstattung und leichte Handhabung, so wird man obige Behauptung gerechtfertigt finden.

Soll das Instrument, dessen man sich nicht anhaltend, sondern nur zu Prüfungen bedient, in Anwendung kommen, dann wird es zunächst auf den Deckel des Dampfeylinders geschraubt, oder bei liegenden Maschinen mit demselben durch entsprechendes Knierohr mit Verschraubung verbunden und die Schnur des Papiercylinders mit der Kolbenstange, oder einem im Sinne derselben sich bewegenden Theil so verbunden, dass derselbe bei einmaliger Kurbelumdrehung eine Hin- und Herdrehung des Papiercylinders bewirkt, dessen Rückdrehung die im Zapfen angebrachte Spiralfeder besorgt. Alsdann wird der Hahn geöffnet, so dass der Druck auf das Instrument wirkt.

Dem Instrument werden beigegeben: zwei Spiral-Schraubenfederu für verschiedene Dampfspannungen, ein mit der Scala übereinstimmender Maassstab, ein verstellbares Rostral (Parallellineal) zur bequemen Eintheilung der Nulllinien, Papier für die Diagramme und alle kleinen, zum Gebrauch erforderlichen Utensilien, als: Leitrollen, Holzstücke zur Spannung der Schnüre, Schraubenzieher etc.

Der ganze Apparat ist in einem sauber polirten Holzkasten aufbewahrt.

Zu bemerken ist noch, dass dergleichen Indicatoren von uns auch mit **selbstthätig vertical verstellbarem Papiercylinder** gefertigt werden, um für jeden Hub eine Curve für sich zu erhalten und nicht erst ein neues Papier einwechseln zu müssen; der Apparat lässt sich auch nachträglich statt des gewöhnlichen Papiercylinders anbringen, ist, wenn man will, wie dieser zu benutzen und wird extra berechnet. Für Indicator-Untersuchungen bei Locomotiven ganz besonders wichtig.

Ausserdem werden diese **Indicatoren für Gebläse** angefertigt mit bedeutend vergrössertem Kolben und **auch mit Uhrwerk, um von Windpressungen** eine graphische Darstellung unter Angabe der Zeit zu erhalten.

Bei Bestellung ist über den Druck, zu welchem die Indicatorfedern eingerichtet sein sollen — event. über Art der Theilung, namentlich auch für Vacuum, genaue Vorschrift zu machen.

Ueber alle **Details zur Montage etc.** beziehen wir uns auf das angezogene Werkchen: „Der Indicator und seine Anwendung“ von P. H. Rosenkranz, über deren Ausführung es noch der speciellen Vereinbarung bedarf. — Preisstellung billigst.

PREIS-VERZEICHNISS.

Fig. 1	Indicator nach Richards in eleg. Holzkasten complett	60 Thlr.
„	Derselbe mit selbstthätig vertical verstellbarem Papiercylinder	80 „
„	Indicator nach Richards für Gebläse, ohne Uhr	60 „
„	Derselbe „ „ „ mit Uhr	80 „
„	100 Blatt Indicatorpapier	$\frac{2}{3}$ „

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
Lower Kingstr. 23. Hoestr. 202. Elisabethstr. 655-1. Opernring 10.

Fig. 1.

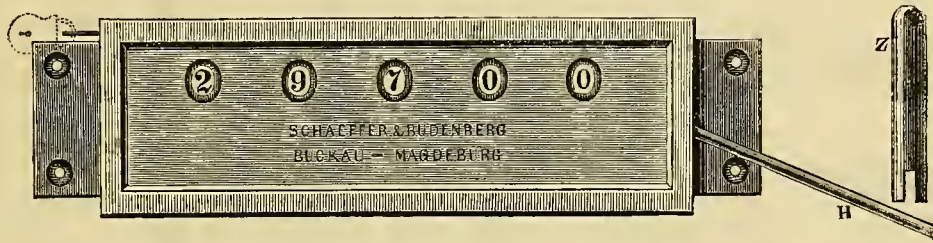


Fig. 2.

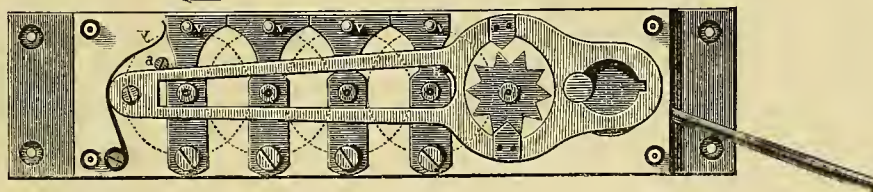


Fig. 3.

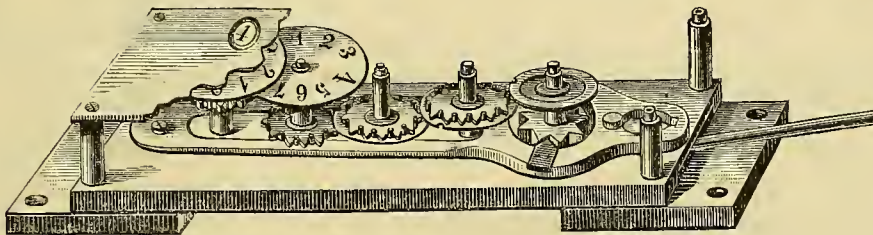
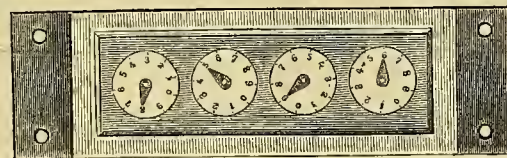


Fig. 4.

**Hub- oder Rotations-Zähler.**

Dieses Instrument dient zur Zählung sich wiederholender, geradliniger oder rotirender Bewegungen und wird an geeigneter Stelle im Maschinenhause etc. festgeschraubt; bei Zählung geradliniger Bewegungen wird der Hebelarm **H** direct oder durch ein einfaches Gestänge mit der Maschine verbunden, wobei nicht nöthig, dem Hebel eine genaue beschränkte Bewegung zu geben; die nöthige ist kaum 90°, die zulässige dagegen 180°; — zur Zählung von Rotationen verwendet man den Zapfen **Z**, welcher, nachdem **H** abgeschraubt, auf der Rückseite des Instrumentes in die dort sichtbare Oeffnung eingesteckt wird, welche in Fig. 2 hell punktirt ist.

In dem auf der Grundplatte ruhenden Kasten befinden sich soviel durch Mitnehmer und Hemmscheiben in der Bewegung regulirte Räder, als das Zifferblatt Zahlenstellen hat. — Jedes Rad hat eine Zahlenscheibe von 0 bis 9. Bei Bewegung von **H** ab- und aufwärts, event. hin und her — oder bei einer Umdrehung von **Z** wird das erste Rad um $\frac{1}{10}$ seiner Axe gedreht, je nach 10 solchen Bewegungen dieses Rades wird das zunächst folgende um $\frac{1}{10}$ fortgeschoben etc. und es erscheinen sonach in den Oeffnungen des Zifferblattes — die entsprechenden Zahlen von der letzten Stelle wachsend — so dass die Summe der von Beginn an gemachten Bewegungen abgelesen werden kann. — Versieht man diesen Apparat mit einem mit Gummiplatte überspannten Trichter, so hat man ein Instrument, mit dem man jeden Augenblick die Drehungen rotirender Wellen etc. zählen kann, indem man die Gummiplatte des Trichters mit der Hand auf die rotirende Achse drückt. Mit dieser Vorrichtung ist der Rotationszähler ganz besonders zur Zählung der Drehungen von Centrifugen geeignet.

Diese Hubzähler oder Rotationszähler werden von uns zu dem speciell weiter unten aufgeführten Zahlenstellen angefertigt und zwar 1) mit Nullstellung und Ankerbewegung ohne Federn; 2) ohne Nullstellung mit Ankerbewegung ganz ohne Federn, diese Zähler mit Ankerbewegung zählen sowohl Rechts- als Linksdrehungen; 3) ohne Nullstellung und ohne Ankerbewegung, zählt nur die Rechts- oder Linksdrehungen.

Fig. 1 repräsentirt die äussere Ansicht aller dieser 3 Sorten Zähler.

Fig. 2 ist die Ansicht eines Zählers für Hub oder Rotationen mit Nullstellung ohne Federn mit Ankerbewegung, unter Hinweglassung der Deckplatte und des Kastens, sowie der Mitnehmer-, Hemm- und Zahlenscheiben (letztere sind nur als Kreise punktirt) um über die Art und Weise der Nullstellung Erklärung zu geben.

Auf der Grundplatte unter dem Anker sind kleine Hebel angeordnet, in deren Mitten sich die Stifte für die Mitnehmer- und Zahlenscheiben befinden; diese Hebel sind um ihre Endpunkte drehbar und haben je eine solche Gestalt, dass, wenn sie aneinander und gegen den Stift *b* anliegen, der Abstand von Mitte zu Mitte überall den richtigen Eingriff der Mitnehmer- und Hemmscheiben gestattet, so dass der Zähler so betriebsfähig ist. In dieser Lage werden dieselben durch eine starke Feder *y* gehalten. Am Ende jedes Hebels befindet sich ein Stift *v* und sind diese Stifte dazu bestimmt, die Hebel einzeln mit einem Finger in der Richtung des Pfeils zurückzudrücken bis an den Stift *a* und so die Ausrückung je einer Mitnehmer- und Hemmscheibe zu besorgen. — Ist das geschehen, so kann man mit einem andern Finger die betreffende Zahlenscheibe auf Null drehen. Um an diese Stifte gelangen zu können, befindet sich oben auf der Längsseite ein Schieber, welcher entgegengesetzt wie Pfeil bei Fig. 2 zurückgezogen werden kann und so die ganze Längsseite freimacht. Um Unbefugte zu verhindern die Nullstellung vorzunehmen, wird in das Ende des Schiebers, wie in Fig. 1 punktirt, ein Schloss gehängt.

Fig. 3 giebt die perspectivische Ansicht eines Zählers mit Anker, ohne Nullstellung, unter Hinweglassung des Kastens, einiger Zahlenscheiben und eines Theils der Deckplatte.

Die Zähler mit Anker lassen in Bezug auf Solidität, Dauerhaftigkeit und Sicherheit nichts zu wünschen übrig und obwohl unsere diversen Zählapparate, von denen in den letzten Jahren über 4000 Stück in Anwendung kamen, kaum einer Empfehlung bedürfen, so erlauben wir uns doch zur Bequemlichkeit des Publicums hier einige Atteste über Bewährung derselben zum Abdruck zu bringen:

Schweinfurt, den 6. Mai 1868.

Der Magistrat der Königlich Bairischen Stadt Schweinfurt bestätigt hiermit, dass der aus der Maschinenfabrik von **Schäffer & Budenberg** in Magdeburg unterm 19. Juni 1866 für das hiesige Wasserwerk bezogene Touren- resp. Hubzähler (No. 3548) sich durch möglichst einfache, dabei aber sehr solide Construction, bequeme Anwendung und Zuverlässigkeit auszeichnet.

Der rechtskundige Bürgermeister l. a.
gez. **Müller**, Rechtsrath.

(L. S.)

Maschinen- & Kessel-Fabrik,
Eisen- & Gelbgießerei
von
G. Kuhn.

Stuttgart-Berg, den 6. Mai 1868.

Herren Schäffer & Budenberg in Buckau-Magdeburg.

Ihren Wunsche gemäss theile ich Ihnen mit, dass der von Ihnen im Monat April vorigen Jahres bezogene Hubzähler No. 3691 von mir an einer 80pferdigen Dampfmaschine angebracht wurde, welche für die Stadt Stuttgart mittelst zweier grossen Pumpen einen Theil des nöthigen Trinkwassers liefert.

Da die Kosten dieser Wasserförderung von verschiedenen Körperschaften gemeinschaftlich getragen werden, da ferner die Stadt das Wasser an die Abnehmer dem Maassinhalte nach verkauft, so findet eine möglichst genaue Controle über die Menge des geförderten Wassers statt, und zwar dadurch, dass man die Hübe der Pumpenkolben zählt.

Dies geschieht nun mittelst des mir von Ihnen gelieferten Hubzählers. Derselbe hat sich auch hier wieder, wie die früher von mir angewandten, als zuverlässig bewährt; er war bequem anzubringen und erhält seine Bewegung durch die eine Excenterstange der Dampfmaschine; es ist an demselben während seines Gebrauchs weder eine Störung vorgekommen, noch eine Reparatur nothwendig geworden, so dass ich Ihnen meine volle Zufriedenheit mit diesem nützlichen Apparat aussprechen kann.

Hochachtungsvoll

gez. **G. Kuhn.**

Attest.

Auf Verlangen der Fabrikanten **Schäffer & Budenberg** in Magdeburg wird hiermit attestirt, dass die von denselben bezogenen Hubzähler No. 1584 und nach Art derselben construirten, bei dem Gebrauch an Bord sich als brauchbar, zuverlässig und dauerhaft erwiesen.

Danzig, den 7. Mai 1868.

Königliche Werfft.
Werner, Corvetten-Capitain.

Gussstahlfabrik bei Essen in Rheinpreussen, den 8. Mai 1868.

Die von Herren **Schäffer & Budenberg** in Buckau bei Magdeburg im August 1866 bezogenen Hubzähler No. 3554 bis 3561, mit 5 Stellen ohne Nullstellung befinden sich seit jener Zeit in ununterbrochenem Betriebe und haben pro Tag à 24 Stunden bis zu 22000 und im Jahresdurchschnitt pro Tag à 24 Stunden je 8000 Hube gemacht.

Sie arbeiten völlig zuverlässig, ohne die geringsten Störungen, mit Ausnahme einer leichten Reparatur, welche durch Abnutzung der Stifte an der Einer-Nummerscheibe bei zwei Hubzählern in der jüngsten Zeit veranlasst wurde.

Ausser drei andern Hubzählern, welche auch schon länger in Betrieb, sind seit einigen Monaten noch zwei in Thätigkeit, die pr. 24 Stunden je 60—70000 Hube ohne die geringsten Störungen machen, so dass ich mit den Leistungen dieser Apparate in jeder Beziehung zufrieden sein kann.

pr. pa. **Friedr. Krupp.**

Wm. Lorsche.

W. Golzbroks.

Fig. 4. Zähler mit Räderübersetzung, wie für Gas- und Wassermesser. — Die indicirte Zahl wird nach Stellung der kleinen Zeiger abgelesen. Die Bewegung erfolgt durch eine hinterwärts hervorstehende Axe und sind solche Zählerwerke nur für Rotationen anwendbar.

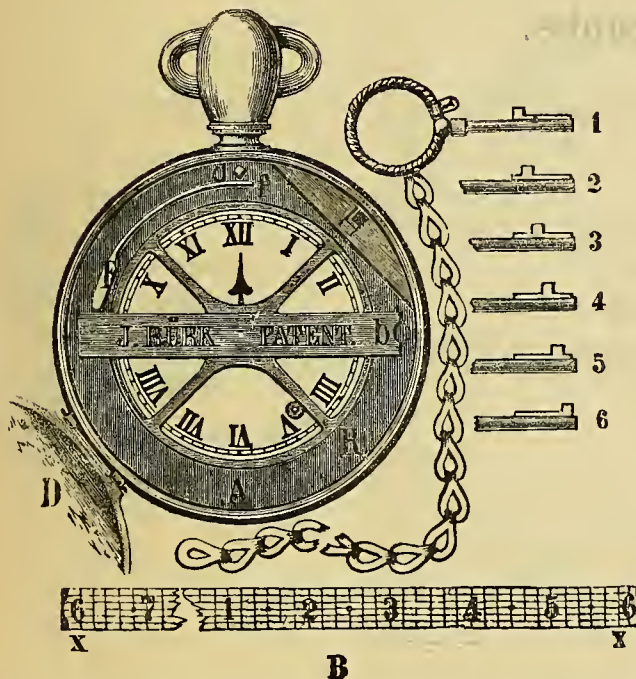
Preis-Verzeichniss.

Figur	Bezeichnung.	mit	7	6	5	4	3	Zahlen.
1	Hub- und Rotationszähler mit Ankerbewegung und Nullstellung, ohne Federn, conform Fig. 2, zählt Rechts- und Linksdrehungen.....		29	27	25	23	21	Thlr.
"	Hub- und Rotationszähler mit Ankerbewegung ohne Nullstellung und ohne Federn, conform Fig. 3, zählt Rechts- und Linksdrehungen		25	23	21	19	17	"
"	Rotationszähler , ohne Anker und ohne Federn, zählt, je nach Angabe, entweder die Rechts- oder Linksdrehungen.....		15	12	11	10	9	"
4	Zählapparate mit Zeiger wie für Gas- und Wassermesser.....		10	8½	7½	6	5	"
	Ein mit Gummiplatte bespannter Trichter		2½					"
	Ausserdem werden auf besondere Bestellung mannichfache Zählerwerke ausgeführt, z. B. mit Pendel, mit Läutewerk, Zähler zu Malzmessapparaten etc. etc.]		Preise nach Vereinbarung.					

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.**Wächter-Control-Uhr.****Patent Bürk.**

Fig. 5.



die Uhr, welcher auf seinen Umgängen auf jeder Station den bezüglichen Controlschlüssel No. 1 bis 6 in das Schlüsselloch oben im Deckel der Uhr und somit auf den Stift *d* steckt und dann umdreht. Danach wird je nach der Form des Bartes des Controlschlüssels die eine oder die andere der sechs übereinander liegenden Federn *F* mit der Spitze *f* gegen das Bulletin gedrückt und das Zeichen der betreffenden Station durch einen Punkt in der Scala von *B* gemacht.

(Sollten mehr als 6 Stationen markirt werden, so sind die weiteren Schlüssel extra zu bestellen; mit 1 bis 6 Punkten, verschieden zusammengestellt, sind selbstredend eine Menge Stationen zu bezeichnen.)

Um die Dauer eines längeren Aufenthaltes auf einer Station nachzuweisen, dreht der Wächter den Schlüssel 2 mal um, zuerst beim Ankommen auf der Station und dann, wenn er sie wieder verlässt. Die Zeichen auf dem Bulletin, das nach Stunden und Sechstelstunden eingetheilt ist, geben somit Auskunft über die Gänge des Wächters nach Zeit und Richtung; man findet, um welche Zeit er auf jeder Station war, ob und welche Station er übergangen, in welcher Reihenfolge er sie besucht hat, wie lange er sich auf dem Wege zwischen den Stationen und auf diesen selbst aufgehalten hat etc. Die Bulletins werden zur bleibenden Notiz — wie Briefmarken auf der Rückseite nass gemacht — in das beigegebene Controlbuch eingeklebt und das Datum und der Name des Wächters daneben bemerkt, die Zeichen erscheinen alsdann „roth“. — Um etwaige, immerhin äusserst schwierige Schlüssel-Fälschungen zu verhüten event. zu entdecken, ist nur nöthig, von Zeit zu Zeit die Controlschlüssel einzelner Stationen — ohne Wissen des Wächters — zu vertauschen. — Zum Richten der Uhr dient der Aufziehschlüssel; er ist mit dem Minutenzeiger, der auf dem Zeigerwerk fehlt, versehen und wird so auf das Minutenrohr gesteckt, dass der Zeiger des Schlüssels auf dem Punkte — der Marke — steht, welche sich auf dem Vierecke des Minutenrohrs befindet.

Die Wächter-Control-Uhren haben sich ihrer vorzüglichen Construction und des durch sie erzielten practischen Nutzens wegen schon eine überraschende Verbreitung verschafft, sie sind solide gearbeitet und mit abprobirten vorzüglichen Werken versehen, ermöglichen eine unbedingte sichere Controle und sind zugleich rücksichtlich des Umstandes, dass eine einzige Uhr für viele zu bewachende Stationen ausreicht, für die Beschaffung die billigsten unter allen bekannten, ähnlichen Zweck erstrebenden Uhren. Bei sorgfältiger Behandlung, regelmässigem Aufziehen etc. wird sich diese Control-Uhr geraume Zeit tüchtig beweisen und durchaus zufrieden stellen.

Bemerkung. Es empfiehlt sich, die Stationsschlüssel zuweilen ohne Wissen des Wächters zu vertauschen und die Wächter ausserdem für etwaige Reparaturen der Controluhr verantwortlich zu machen, event. 15 Sgr. bis 1 Thlr. Reparaturkosten auszusetzen, wofür der pp. Wächter die Uhr in Stand zu halten hat, oder die er sich, wenn keine Reparaturen vorkommen, verdienen kann.

Preis - Verzeichniss.

Fig. 5.	Wächter-Control-Uhr, Patent Bürk, incl. 6 Schlüssel	23 Thlr.
	Jeder Schlüssel mehr.	$\frac{1}{4}$ „
	1 Jahrgang Bulletins	$\frac{1}{2}$ „
	1 Control-Buch, ausreichend für 2 Jahre	1 „
	Pro Stück Schlüsselkette	$3\frac{3}{4}$ Sgr.
	1 Ledertasche zum Schutz der Uhr	1 Thlr.
	1 Blechkasten zur Aufbewahrung des Schlüssels mit Kette	$\frac{2}{3}$ „

Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

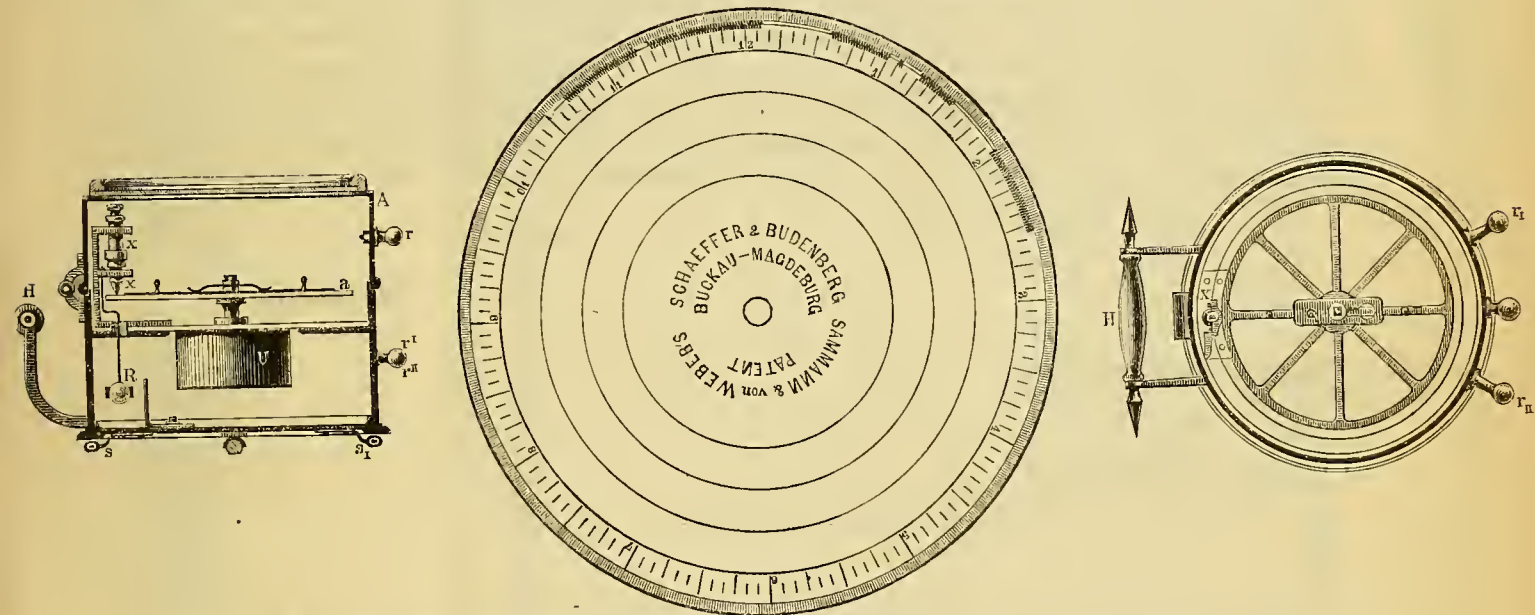
Control-Uhr für Eisenbahnzüge.

Nach Patent Sammamm und v. Weber.

Fig. 1a.

Fig. 2.

Fig. 1b.



Diese Controluhr wird im Allgemeinen in Durchschnitt und Grundriss, durch unsere Zeichnung in $\frac{1}{6}$ der wirklichen Grösse sub Fig. 1 a b, gegeben. Fig. 2 giebt die Ansicht des Zifferblatts (Bulletin) mit Markirung, in $\frac{1}{3}$ der wirklichen Grösse.

Der Zweck dieser Controluhr ist der, die Fahrzeiten und den Aufenthalt der Eisenbahnzüge — selbstthätig — graphisch zu markiren, und dient dazu folgende Einrichtung:

In dem fast in seiner Mitte aufklappbaren, verschliessbaren Gehäuse A ist ein kräftiges Uhrwerk U eingesetzt, welches eine Scheibe a mit der Geschwindigkeit des Stundenzeigers einer Uhr herumbewegt. Bei x ist an zwei schmalen Uhrfedern ein mit Gewicht R als Pendel versehener Zeichenstift aufgehängt, dessen Spitze auf der Scheibe a ruht. Scheibe a dient zur Aufnahme der Bulletins, präp. Papierzifferblätter mit Eintheilung in Stunden und Minuten. Das Bulletin, mittelst Ring, Feder und Druckschranke festgeklemmt, kann leicht ausgewechselt werden. Die Einstellung geschieht so, dass der Zeichenstift gleich Stundenzeiger ist. Unter dem Gehäuse A bei s r liegen Gummibuffer, um die gewünschte schaukelnde Bewegung zu unterstützen. Wird nämlich das ganze Werk der rüttelnden Bewegung, welcher die Eisenbahnfahrzeuge während ihrer Fahrt unterworfen sind, ausgesetzt, und zwar derart, dass die Pendelrichtung rechtwinklig zur Bewegung des Zuges erfolgt, also in der Richtung des Handgriffs H Fig. 1b, der das zu markiren mit pfeilartigen Spitzen versehen ist, so wird der Zeichenstift x, so lange sich der Zug bewegt, kurze, dicht bei einander stehende, radiale Striche hervorbringen. Beim Stillstande des Zuges erscheint dagegen nur eine concentrische Linie auf dem Papier, die sich über diejenige Minutentheilung erstreckt, welche dem Aufenthalte auf der Station entspricht; die Markirung wird also ähnlich wie in Fig. 2 angedeutet erscheinen. Das Zifferblatt (Bulletin) ist so gross, 8" \varnothing , dass die Theilung sehr deutlich zu erkennen ist und die Beobachtung mit der grössten Schärfe geschehen kann.

Zu bemerken ist noch, dass die Handhabe **H** zum bequemen Transport der Uhr vorhanden ist, und dass **r r, r,,** drei Warzen sind, um das Ganze aufrecht darauf hinstellen zu können und so die Arretirung des Zeichenstiftes zu erzielen.

Die Uhr wird aufgezogen, indem man den beigegebenen Schlüssel auf den viereckigen Kopf der in der Mitte befindlichen Druckschraube setzt und rechts dreht.

Diese Controluhren bewähren sich sehr gut, und indem wir Bezug auf Erbkam's Zeitschrift für Bauwesen, 1867, Heft 3—6, Fol. 293 nehmen, wo sich der Abdruck der Verhandlung des Vereins für Eisenbahnkunde vom 11. December 1866 unter dem Vorsitz des Oberbaudirectors Herrn Hagen und dem Schriftführer Herrn Regierungs- und Baurath Schwedler findet, geben wir hier noch speciellen Abdruck der lobenden Aeusserungen über Brauchbarkeit dieser Uhren, welche der Herr Ober-Maschineumeister Kretschmer in Stettin uns zur Verfügung gestellt hat.

Attest.

Auf Ihren ausgesprochenen Wunsch, Ihnen ein Gutachten über die Brauchbarkeit und Verlässlichkeit der von Ihnen bezogenen Control-Uhren zur selbstthätigen Notirung der Fahrzeit und der Aufenthaltszeit der auf der Bahn coursirenden Züge auszustellen, bezeuge ich der Wahrheit gemäss hiermit, dass diese Uhren nunmehr seit 1½ Jahren bei stetem Gebrauch ihrem Zwecke in erwünschter Weise entsprochen haben. Die Uhrwerke an und für sich haben sich trotz der Erschütterung, denen sie, im Gepäckwaagen stehend, ausgesetzt sind, als richtig gehend und zuverlässig erwiesen und sind die Andeutungen vermittelt des durch die Erschütterung des in Bewegung befindlichen Wagens hin und her schwingenden Pendel-Stiftes der Art, dass man genau die Zeiten, während welcher der die Uhr enthaltende Wagen in der Fahrt gewesen und während welcher derselbe stille gestanden hat, abnehmen kann. Die Nutzenanwendung dieser Uhren, deren wir 11 Stück benutzen, hat manche Unregelmässigkeiten des Betriebspersonals aufgedeckt und sehr zur Erzielung einer gleichmässigen Pünktlichkeit in der Expedirung der Züge beigetragen.

Stettin, im December 1866.

Achtungsvoll

Kretschmer.

An

die Herren **Schäffer & Budenberg**

zu

Buckau-Magdeburg.

Wir können heute diese Controluhren allen Bahndirectionen um so mehr empfehlen, als seit Aus tellung obigen Attestes durch die Reihe der Jahre die Branchbarkeit derselben sich um so eclatanter herausgestellt hat.

Preis-Verzeichniss.

Fig. 1. Eisenbahn-Control-Uhr	75	Thlr.
400 Bulletins dazu	6	„

Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in **Buckau-Magdeburg**.
 MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Fig. 1.

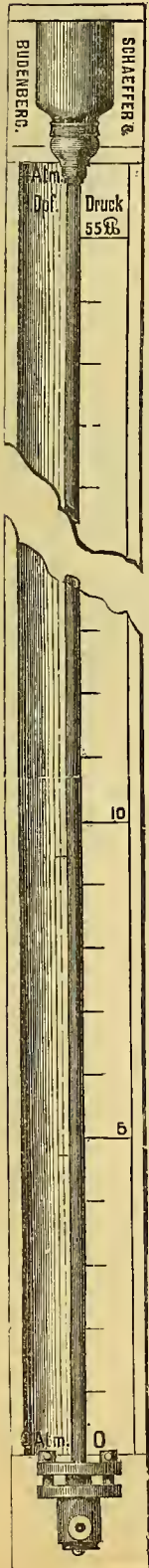
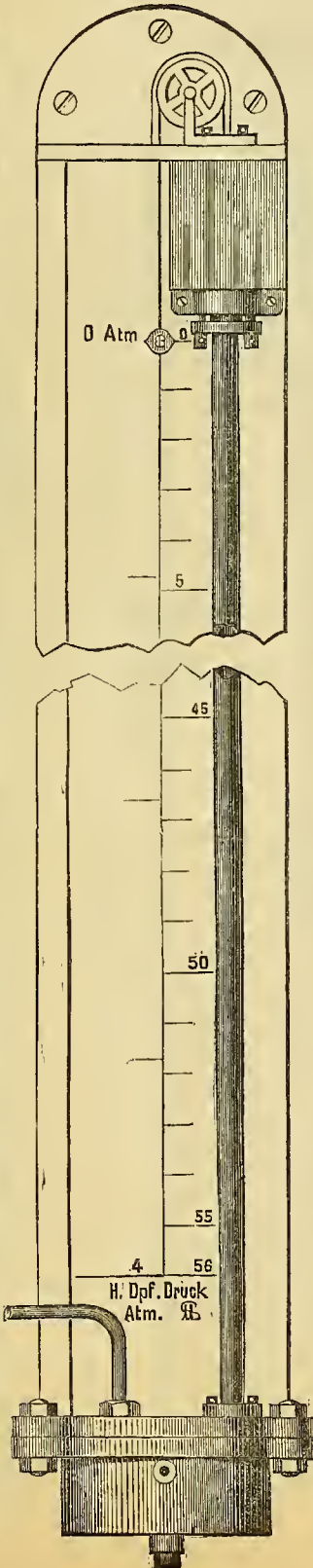


Fig. 2.



Offene Quecksilber-Manometer. Normal-Manometer.

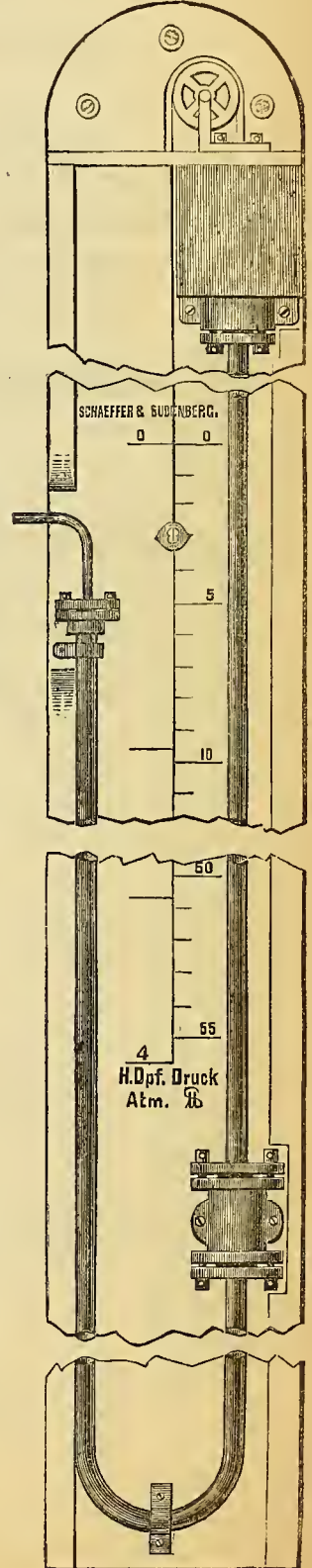
Fig. 1. Quecksilber-Manometer mit Glasröhre und sichtbarem Nullpunkt.

Fig. 2. Quecksilber-Manometer mit Eisenrohr und Schwimmer.

Die Eintheilung der Scala erfolgt bei diesen Normal-Manometern nach Zoll-Pfund event. nach Vorschrift. Die Höhe der Quecksilbersäule ist an der Scala für jede Atmosphäre Ueberdruck gleich 28" par. oder 30" engl. M. od. 29" preuss. Die Rolle zur Aufnahme der Schwimmerschnur ist unter Glasverschluss gelegt, um sie gegen Staub u. s. w. zu schützen.

Die Normal-Manometer dienen zur Adjustirung aller übrigen Manometer.

Fig. 3.



Schenkel-Manometer.

Fig. 3. Offenes Quecksilber-Manometer mit Schwimmer.

Die Eisenröhren von $\frac{3}{8}$ " oder $\frac{1}{2}$ " Durchmesser l. Weite, je nach Bestellung.

Da die Röhren im Innern ungleich weit sind und das sorgfältige Auskolben derselben eine genaue Calibrirung nicht ermöglicht, so würde die Scalirung nach dem Zollstocke (wie bei Fig. 1 und 2) keine richtige Eintheilung geben; wir bestimmen daher die Scala nach dem Manometer Fig. 1.

Den Manometern mit Schwimmer wird ein Fläschchen mit Glycerin beigegeben, wovon zuweilen ein paar Tropfen in die Schenkelröhre zu bringen sind.

Das Nachfüllen der Quecksilber-Manometer mittelst Weissblechrinne muss vermieden werden, weil das darauf befindliche Zinn sich auflöst und so das Quecksilber verunreinigt. Am besten sind Rinnen oder Trichter aus steifem und reinem Papier.

Um eine trübe Glasröhre zu reinigen, befeuchtet man etwas Watte mit Schwefelsäure und fährt mittelst daran befestigtem Messingdrath im Glasrohre auf und ab.

Preis-Verzeichniss.

Die Preise verstehen sich exclus. Quecksilber, welches nach dem Stande der Quecksilberpreise billigst berechnet wird.

Fig. 1. **Quecksilber-Manometer, offen, Glasröhre, Auffangegefäss von Glas, mit natürlicher Scala und sichtbarem Nullpunkt.**

zu	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Atmos.
	8	9	11	13	14½	16	18⅔	25	28	30	32	34	36	38	40	Thlr.

Fig. 2. **Quecksilber-Manometer, offen, mit ½'' ⊖ Eisenrohr und Schwimmer, Auffangegefäss von Eisen.**

zu	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Atmos.
	16	18⅔	21⅓	24	26	28	30	32	34	36	39	41	43	45	47	Thlr.

Fig. 3. **Quecksilber-Manometer, offen, Eisenrohr mit Schwimmer und Auffangegefäss von Eisen.**

	zu	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Atmos.
mit ⅔'' ⊖ Röhren		9	11½	14	16½	19	22½	25	26¼	28½	30½	32½	34½	36½	38½	40½	Thlr.
mit ½'' ⊖ Röhren		11	13¼	17	19½	22	24½	27¼	30	32½	35¼	38	40½	42½	44½	46½	Thlr.

Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23, Hopest. 202. Elisabethstr. 655-1. Opernring 10.

Fig. 1.

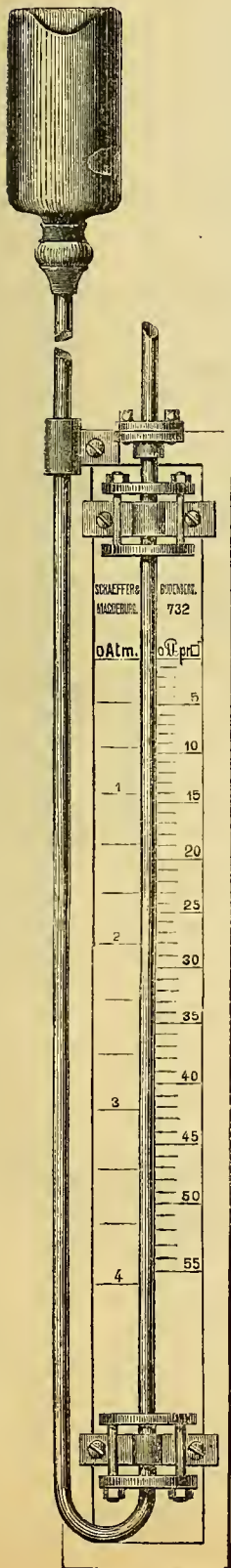
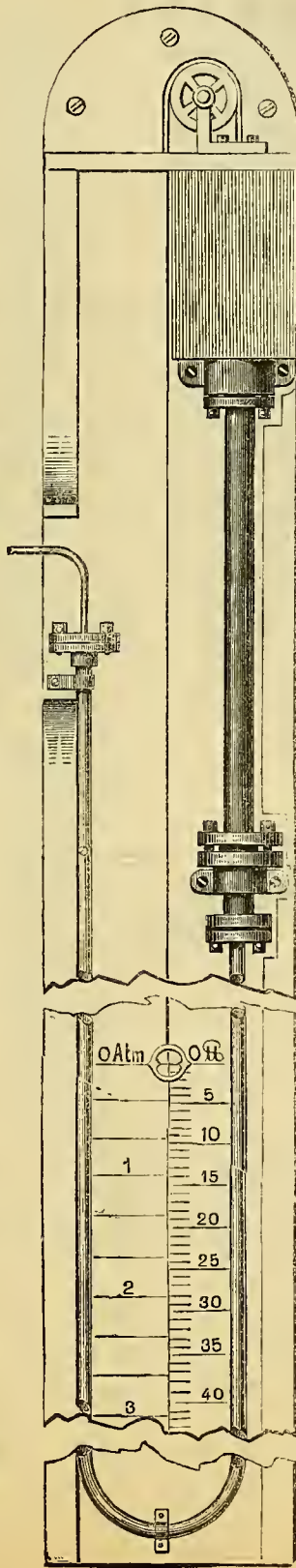


Fig. 2.



Offenes Quecksilber-Manometer mit verkürzter Scala.
Quecksilber-Vacuummeter.

Fig. 1. Quecksilber-Manometer mit verkürzter Scala am Fallrohr, Auffangegefäß von Glas.

Die indicirende Glasröhre kann ohne Erneuerung der Scala wieder ersetzt werden. Der auf's Quecksilber wirkende Druck wird nicht nach dem Steigen, sondern nach dem Fallen des Quecksilbers an der Scala wahrgenommen, indem es aus einer weitem, hinter der Glasröhre liegenden und mit dieser communicirenden Eisenröhre in den Schenkel der engen Röhre emporsteigt. Der cubische Inhalt der weiten Röhre ist in dem Verhältniss grösser als der der engen Röhre, in welchem die Scala verkürzt werden soll. Dieses Manometer empfiehlt sich vornehmlich durch leichte Versandbarkeit, da das Scalabrett nur ca. 3' bei 1—6 Atm. und ca. 6' bei 7—12 Atm. hoch ist und die lange Steigröhre aus einzelnen Theilen besteht, die sich (mit zuverlässiger Dichtung versehen) leicht zusammenschrauben lassen, auch, sollte die Höhe des Kesselhauses nicht für die Höhe der Steigröhre ausreichen, bequem zum Dach herausgeführt werden kann.

Fig. 2. Quecksilber-Manometer mit verkürzter Scala am Steigrohr, mit Schwimmer und Auffangegefäß von Eisen.

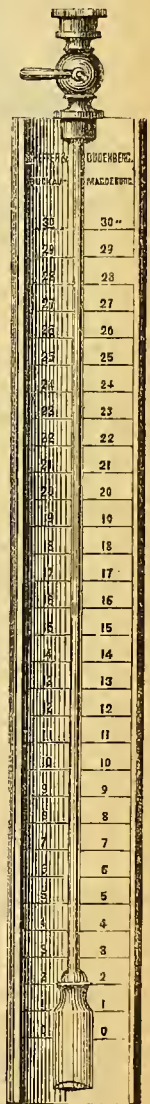
Fig. 3. Quecksilber-Vacuummeter mit Dreiweghahn zur Messung der Luftverdünnung in Vacuum-Apparaten und Condensatoren. Die Scala entspricht 1 Atm. = 28" par. oder 29" preuss. oder 30" eng. M.

Den Schwimmer-Manometern wird ein Fläschchen mit Glycerin beigegeben, wovon zuweilen ein paar Tropfen in die Schenkelröhre zu bringen sind.

Das Nachfüllen der Quecksilber-Manometer mittelst Rinnen aus Weissblech ist zu vermeiden, weil der Zinnüberzug durch Quecksilber aufgelöst wird und solches dadurch verunreinigt wird.

Am besten empfehlen sich Rinnen oder Trichter aus reinem steifen Papier.

Fig. 3.



PREIS-VERZEICHNISS.

Die Preise verstehen sich exclus. Quecksilber, wo nicht besonders bemerkt, welches nach dem Stande der Quecksilberpreise billigst berechnet wird.

Fig. 1. **Quecksilber-Manometer, offen, mit verkürzter Scala am Fallrohr, Auffangegefäss von Glas, Scala von 3—8 Atm. 30" lang und — von 9—15 Atmos. 60" lang.**

zu	3	4	5	6	7	8	9	10	11	12	13	14	15	Atmos.
	18	19	20	21	22	24	30	31	32	33	34	35	36	Thlr.

Fig. 2. **Quecksilber-Manometer, offen, mit verkürzter Scala am Steigrohr, Eisenrohr mit Schwimmer und Auffangegefäss von Eisen.**

zu	3	4	5	6	7	8	9	10	11	12	13	14	15	Atmos.
	18	21	24	27	30	33	36	39	42	45	48	51	54	Thlr.

Fig. 3. **Quecksilber-Vacuummeter, 1 Atmos. = 28" par. = 29" preuss. = 30" engl. = 76 Cent. mit Dreiweghahn, incl. Quecksilber 10 Thlr.**

Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Fig. 1.

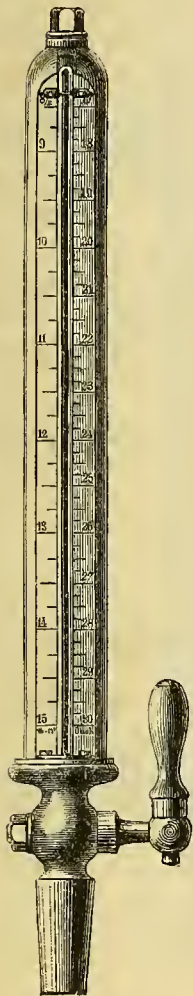


Fig. 2.



Fig. 6.

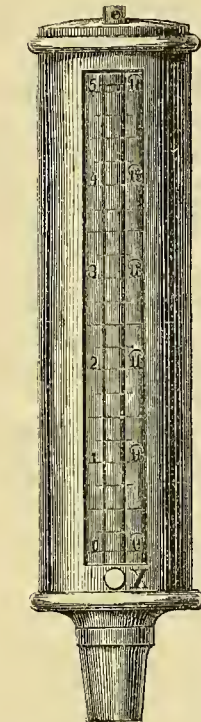


Fig. 3.

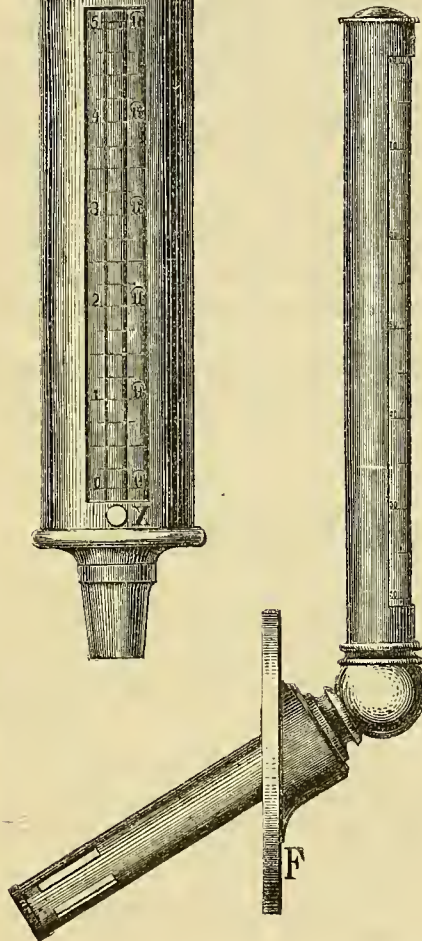


Fig. 7.

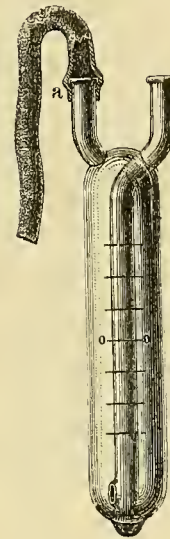


Fig. 5.

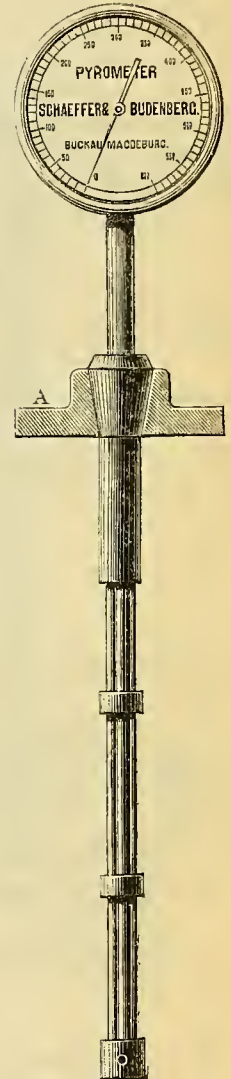
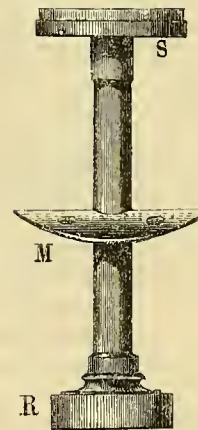


Fig. 4.



Quecksilber-Vacuometer. Thermometer. Pyrometer.
Quecksilber-Gebläse-Manometer. Gas-Manometer.

Fig. 1. Quecksilber-Vacuometer in Messing; zur Messung der Luftverdünnung in Vacuum-Apparaten. Construction analog der des Heberbarometers. Das Rohr ist um 16" verkürzt und die Scala von 16 bis 28" par. Maass getheilt, Anbringung direct mittelst des Conus. Wir fertigen auch Quecksilber-Vacuometer, wie sub Tafel IVA, Fig. 3 (vergl. Preiscurant); die Evacuation ist hier an der Scala nach dem Steigen der Quecksilbersäule von 0 bis 28" par. oder 0 bis 30" engl. oder von 0 bis 76 Ctm. abzulesen, je nach Bestimmung.

Fig. 2. Thermometer in doppelt geschlitzter drehbarer Messinghülse. Zur Messung des Wärmegrades der in Vacuum-Apparaten, und allen in Hohlgefäßen zu verdampfenden Flüssigkeiten. Anbringung mittelst des Conus b, in welchem die Dichtung für das Glasthermometer. Vorzug: nach Abschrauben von b und r kann ein etwas zerstörtes Glas leicht wieder durch ein neues ersetzt werden; es ist rathsam, stets Reserve-Glas-Thermometer vorrätig zu führen.

verte!

Fig. 3. Winkel-Thermometer. Zweck und Construction wie bei Fig. 2. Um das Anbringen zu erleichtern, wird auf Verlangen auch ein Flantsch F zur Aufnahme des Conus mitgeliefert.

Fig. 4. Pyrometer mit Metallspirale. Anbringung mittelst M. Durch die ungleiche Ausdehnung (in der Wärme) der im Gehäuse R befindlichen aus Messing und Stahl zusammengelötheten Spirale, wird ein mit dieser durch eine Stange in Verbindung stehender Zeiger bewegt, der auf der Scala in S den Grad der Erhitzung indicirt. Selbstredend zeigt sich die Temperatur-Veränderung — wenn auch sicher — nicht sofort, sondern allmählich auf der Scala. Eintheilung nicht über 700° C. möglich.

Fig. 5. Pyrometer nach Gauntelett. Beruht ebenfalls auf der ungleichen Ausdehnung verschiedenartiger Metalle in der Wärme. Ein Eisenstab und drei concentrisch darum angeordnete Messing- oder Kupferstäbe sind unterhalb fest miteinander verbunden und wirkt die durch die Temperatur-Veränderung hervorgebrachte Bewegungsdifferenz auf ein Zeigerwerk, dessen Scala genau adjustirt ist. Diese Pyrometer empfehlen sich besonders für hohe Temperaturen und da, wo Quecksilber-Thermometer ihrer Zerbrechlichkeit halber unanwendbar sind. — Damit diese Pyrometer richtig indiciren, ist erforderlich, dass sie bis zum Conus der Wärmequelle ausgesetzt werden, vor dem Verbiegen geschützt werden und vor dem Ausglühen gehütet. Ueber 800° C. bei Anwendung von Messingstäben und über 1000° C. bei Anwendung von Kupferstäben sind diese Pyrometer nicht ausführbar. Die Länge unterhalb des Conus variirt nach Bestellung. Der Flantsch A zur Anbringung des Pyrometers wird nur auf besondere Bestellung mitgeliefert. Eintheilung, ob Reaumur, Celsius oder Fahrenheit ist ebenfalls bei Bestellung anzugeben.

Die bequeme Anwendbarkeit der Pyrometer bei Hochöfen, Windleitungen und Knochenkohlen-Glühöfen dürfte noch besonders erwähnt werden.

Fig. 6. Quecksilber-Gebläse-Manometer, offen, nach „Nottebohm“, 5--6 Ø zur Messung des Drucks der durch Gebläse comprimirt Luft. Das beigegebene Quantum Quecksilber wird nach Lösung der Schraube x dort eingefüllt und die Oeffnung alsdann geschlossen. Anbringung direct mittelst des Conus; empfiehlt sich durch grosse Solidität.

Fig. 7. Wasser-Manometer für Gas-Anstalten, ganz in Glas ausgeführt. Diese Sorte ist sehr billig und doch vollständig zweckentsprechend.

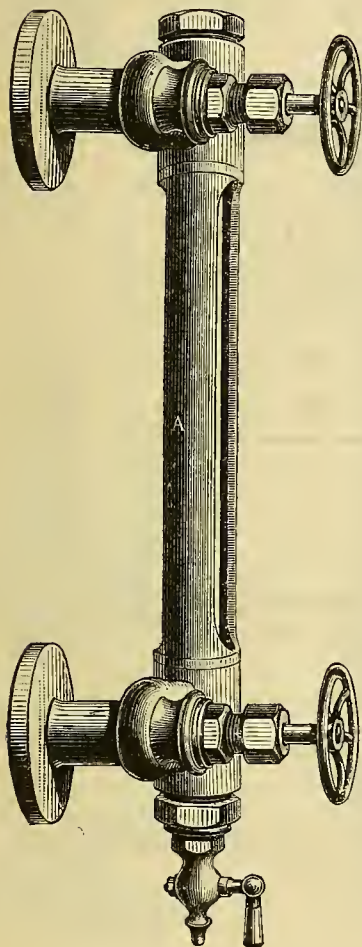
Bei a wird auf Verlangen ein entsprechend langer Gummischlauch mitgeliefert.

Theilung nach Vorschrift, mit Nullpunkt in der Mitte der Scala, oben oder unten. Wird in 3 Grössen geliefert, No. 1, No. 2 und No. 3.

Preis-Verzeichniss.

Fig. 1	Quecksilber-Vacuummeter in Messing mit Glasglocke (1 Atm. = 28" par. = 30" engl., = 76 Ctm.)	10 Thlr.
" 2	Thermometer in Messinghülse, 40" = 1046 Millim. lang, vom Conus ab 30" = 785 Millim.....	10 "
" "	Dasselbe " " 18" = 471 " " " " " 8" = 209 "	8 "
" "	Reservröhren dazu, 40" lang	2 $\frac{3}{4}$ "
" "	do. do. 18" "	1 $\frac{1}{2}$ "
" "	Thermometer mit einfachem Kupferrohr mit Haken, 3—4' lang	6 $\frac{1}{2}$ "
" "	Thermometer in massiver Holzfassung, 40" lang = 1046 Millim.....	4 "
" "	Dasselbe " " " 20" " = 523 "	3 "
" "	Thermometer in Glas, 12" lang..... per Dutzend	8 "
" 3	Winkel-Thermometer für Vacuum-Apparate mit Conus, exclusive Flantsch	12 "
" "	Flantsch dazu in Metall	2 $\frac{1}{2}$ "
" "	Reservröhren dazu	" "
" "	Dasselbe für das Jellinek'sche Verfahren, vom Conus 40" lang, exclusive Flantsch	15 "
" 4	Pyrometer mit Metallspirale.....	15 "
" 5	Pyrometer nach Gauntelett, bis 5' lang ab Conus.....	20 "
" "	Flantsch dazu in Metall	2 $\frac{1}{2}$ "
" "	do. do. „ Gusseisen.....	1 $\frac{1}{2}$ "
" 6	Quecksilber-Gebläse-Manometer nach Nottebohm und bis 6 Ø, grosse Sorte } incl. Quecksilber {	12 "
" "	Dasselbe " " " " 3 " kleine " }	9 "
" 7	Wasser-Manometer, ganz in Glas, für Gasanstalten.....(Kleinste) No. 1	1 $\frac{1}{2}$ "
" "	Dasselbe..... " 2	2 "
" "	Dasselbe..... " 3	2 $\frac{1}{2}$ "
" "	Gummischlauch dazu per Pfund.....	2 "

Fig. 1.

**Wasserstandzeiger**

von Metall

mit geschützter Glasröhre, fertig zum
Anschrauben an den Dampf-Kessel.

Fig. 1. Wasserstandzeiger mit Absperr-Ventilen und geschützter Glasröhre.

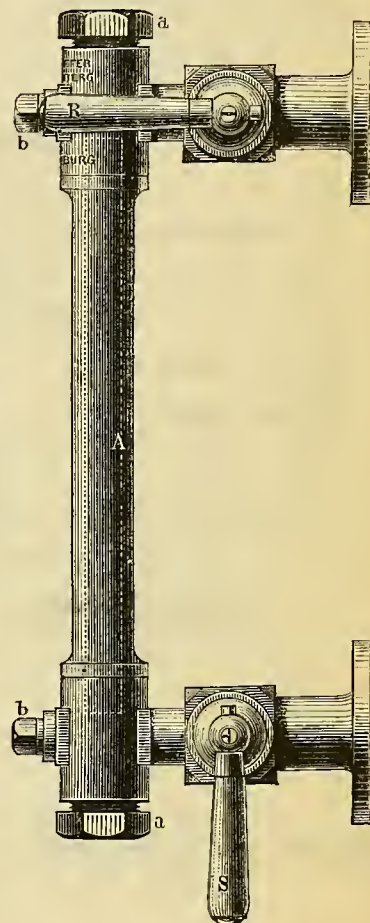
Der Ablasshahn im untern Ventilkopf, vergl. Taf. VA Fig. 10/11, dient zur Entfernung des Wassers aus dem Glasrohre nach erfolgter Abstellung der Ventile und zur Controlle des Wasserstandes, sowie zum Ausblasen des Wasserstandzeigers per Dampf.

Fig. 2. Wasserstandzeiger wie Fig. 1, nur anstatt der Absperr-Ventile mit Hähnen versehen, wovon der untere ein Dreiweghahn ist.

Dieser ganz von Metall nach eigener Construction solide ausgeführte Wasserstandzeiger hat sich seit langen Jahren practisch durchaus bewährt.

Bemerkung: Die geschlitzte Metallhülse A fest mit den Kopfen der Hahnstücke oder Ventilgehäuse verbunden, verhindert das Verziehen derselben und schützt ausserdem die Glasröhre vor Beschädigung durch Stoss oder vor dem Zerspringen durch Luftzug; die Reinigung der Canäle ist ohne Beschwerde jederzeit zu vollziehen, und eine Glasröhre (beim etwaigen Zerspringen) leicht zu ersetzen.

Fig. 2.

**Stellung der Hahnhebel des Apparates Fig. 2.**

1) Soll der Apparat functioniren, dann werden beide Hahnhebel — R und S — so gestellt, wie auf obiger Zeichnung der Hebel R gestellt ist.

2) Soll behufs Einsetzen einer neuen Glasröhre der Zugang zu dieser abgestellt werden, so wird R parallel mit A nach unten und S ebenso gestellt. Dampf und Wasser sind dann abgesperrt.

Einsetzen einer neuen Glasröhre. Nachdem die Schrauben a a und b b mittelst eines Mutter-schlüssels gelöst und die beschädigte Glasröhre mit ihren Dichtungen herausgenommen, ist die neue Glasröhre mit guter, frischer Gummidichtung einzusetzen und dabei darauf zu achten, dass die Oeffnung der messingenen Druckringe mit dem Canale des betreffenden Dreiweghahnes in Verbindung bleibt. Sobald Glasröhre, Gummidichtung und messingene Druckringe richtig eingelassen sind, muss man die Schrauben b b gleich um so viel anziehen, dass die nach innen durchstehenden Enden dieser Schrauben in die Oeffnung der Ringe fassen.

3) Soll behufs Reinigen der Glasröhre etc., unter Absperrung des Wassers, der Dampf durch den Apparat blasen, werden beide Hahnhebel wie bei Fig. 2 gestellt. Der Dampf entweicht dann durch das in dem untern Hahnkörper befindliche Loch nach unten, und reinigt so auch den Kanaltheil zwischen Hahn und unterem Kopfstück; es ist die Anwendung eines Ablasshahnes wie in Fig. 1 hier also nicht erforderlich und würde aus letztem Grunde fast unzweckmässig erscheinen.

Hauptdimensionen von Fig. 1 und 2, und Preis-Verzeichniss.

	Entfernung von Mitte zu Mitte		Flantschdurchmesser		Aeusserer Durchmesser des Glasrohrs		P r e i s		
	in rhld. Zollen.	in Millimetern.	in rhld. Zollen.	in Millimetern.	in rhld. Zollen.	in Millimetern.	Fig. 1. mit Ventilen.	Fig. 2. mit Hähnen.	
a Gross Modell	13	340	3½	91	¾	20	20	18	Thlr.
b Klein Modell	10	262	3¼	85	⅝	16	16	15	Thlr.

Bemerkung: Gebohrte Flantschen und extra grosse werden extra berechnet!
Die Wasserstands-Apparate werden mit Dampf- und Wasserdruck practisch probirt!

Wasserablasshahn, Fig. 1 gezeichnet, wird ausser obigen Preisen berechnet bei a) **Gross Modell 2 Thlr.**
b) **Klein Modell 1½ „**

Wasserstandgläser,

doppelt gekühlt, sehr haltbar (Durchmesser und Länge sind anzugeben) von 6 bis 10'' lang per Dutzend 2½ Thlr.
 " 10½ " 13'' " " " 3 "
 " 13¼ " 16'' " " " 3½ "

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
Lower Kingstr. 23. Hohestr. 202. Elisabethstr. 655-1. Opernring 10.

Fig. 2.

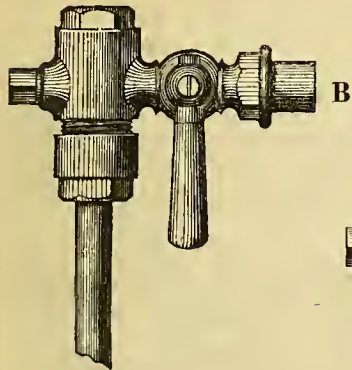


Fig. 1.

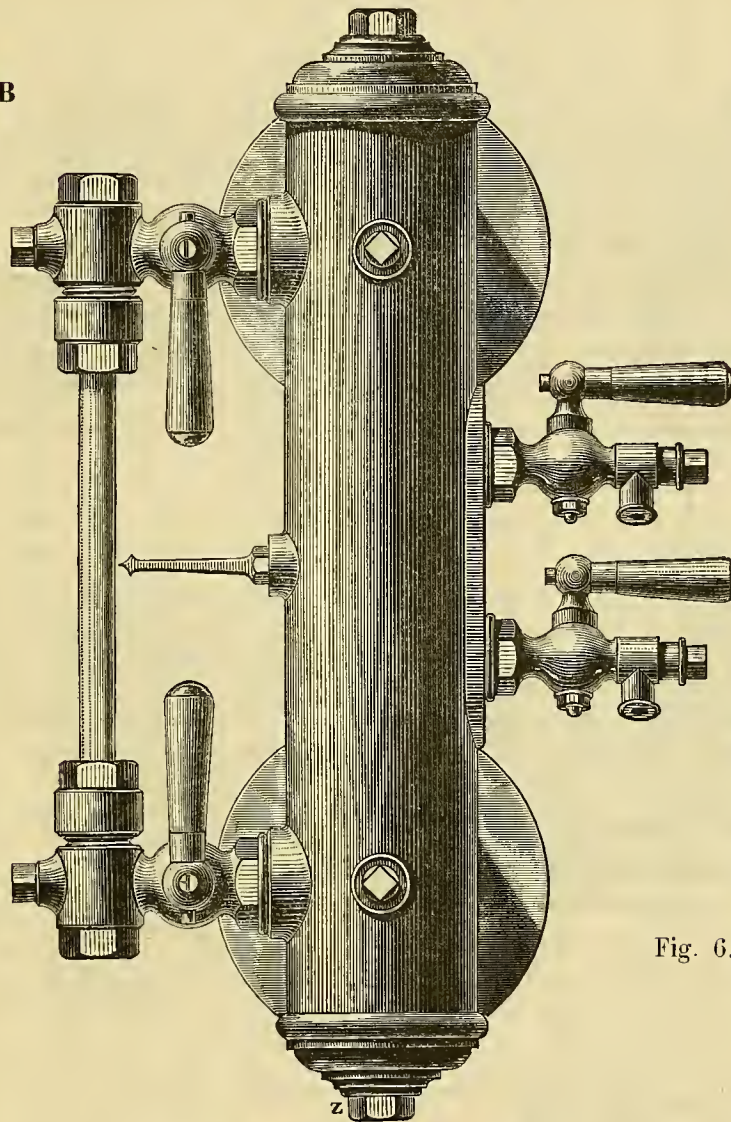
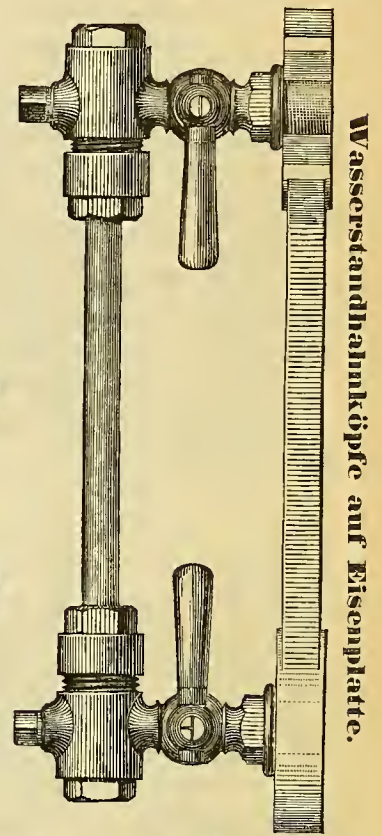


Fig. 3.



Wasserstandhahnköpfe.

Wasserstandhahnköpfe auf Eisenplatte.

Probir-Hähne.

Probir-Ventile.

Fig. 4.

Fig. 6.

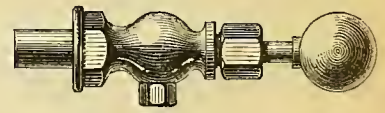
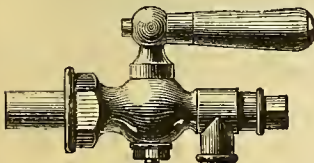


Fig. 5.

Wasserstandzeiger.

Fig. 7.

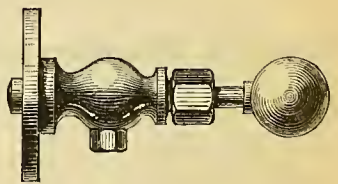
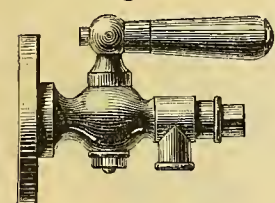


Fig. 9.

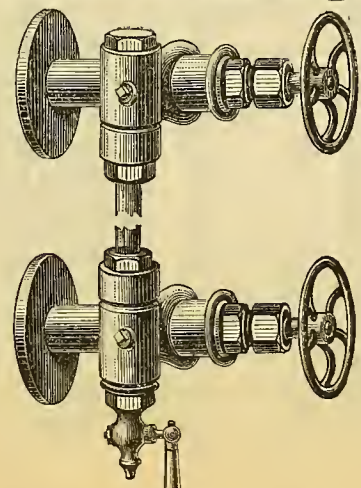
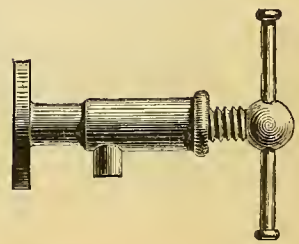
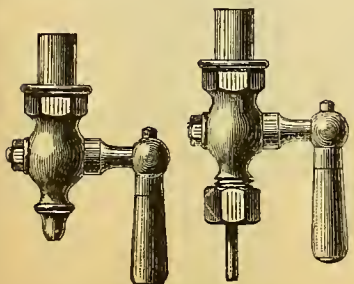


Fig. 10.

Fig. 11.

Fig. 8.



Abläss-Hähnen.

Wasserstand-Ventilköpfe.

Schraub-Probir-Ventile.

Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in **Buckau-Magdeburg.**

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Ventile.

Fig. 1.

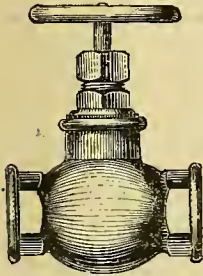


Fig. 2.

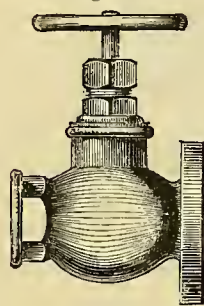


Fig. 3.

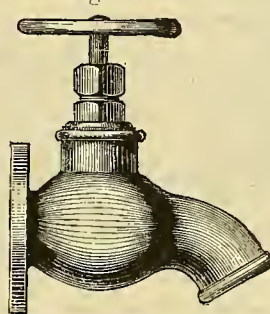


Fig. 4.

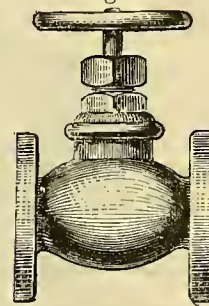


Fig. 5.

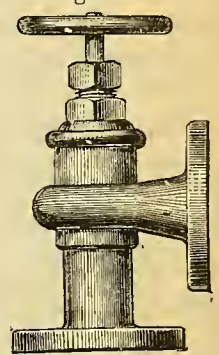


Fig. 6.

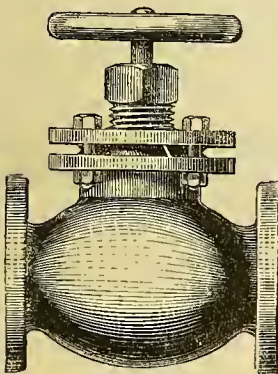


Fig. 14.

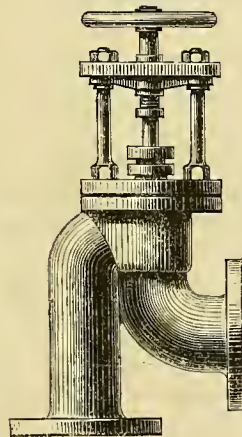


Fig. 8.

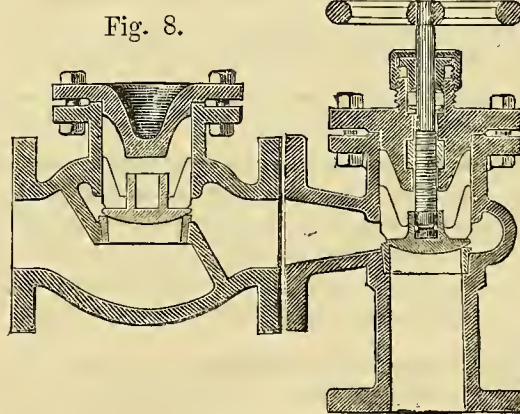


Fig. 9.

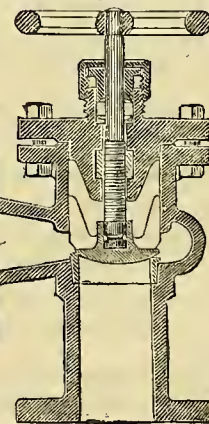


Fig. 7.

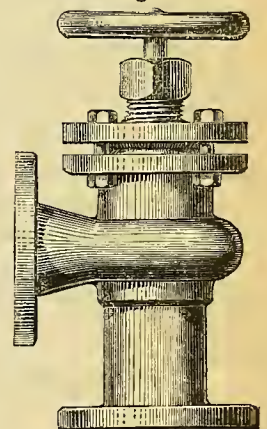


Fig. 10.

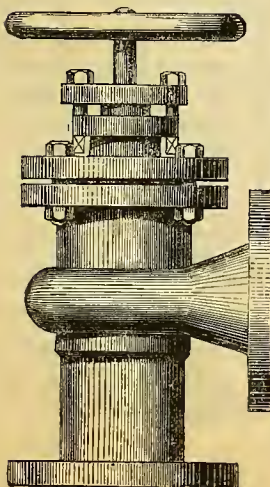


Fig. 11.

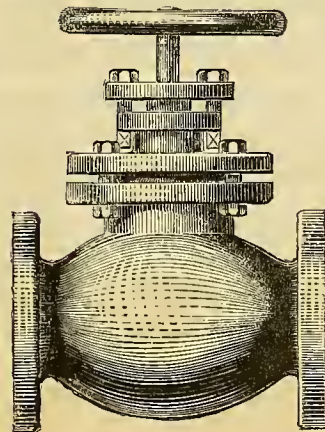


Fig. 12.

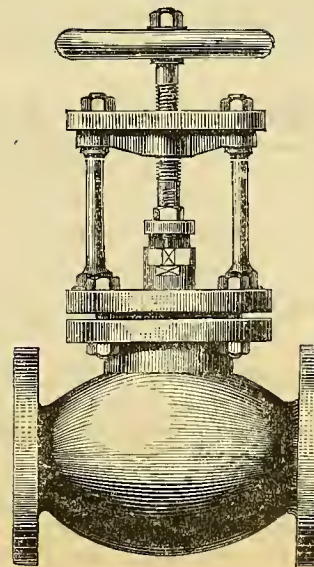
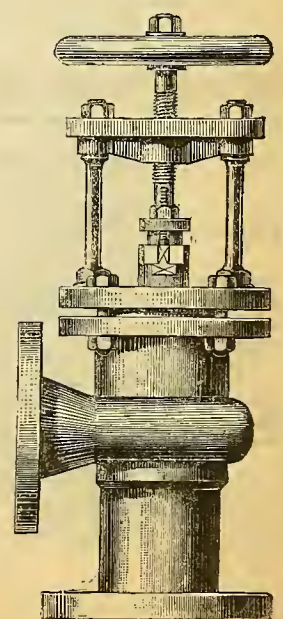


Fig. 13.



Bemerkungen zu Tafel VI, Figur 1 bis 14.

Die Construction der Ventile ist derartig gewählt, dass die Durchgangsöffnung nicht durch Steege beeinträchtigt wird. Die Führung ist nämlich, wie aus Fig. 8 und 9 ersichtlich, nach Oben über den Ventilkegel gelegt. Diese Einrichtung hat neben dem freien ungehinderten Durchpass der Dämpfe und Flüssigkeiten den Vorzug, dass 1) bei Berechnung der Ventildurchgangsöffnung Steege nicht in Abzug gebracht zu werden brauchen — und der Durchgang einfach durch Aufschlagen in einer Kreistabelle gefunden wird; 2) dass der Schwerpunkt der Ventilkegel sehr tief liegt, wodurch gleichmässiges Aufsetzen erzielt ist, und dass 3) ein Ausschleissen der Kegel, wie es bei denen mit unterer Führung vorkommt, indem die pp. passierende Flüssigkeit sich an den Steegen trennen und dahinter wieder vereinigen muss, hier nicht stattfinden kann, leichteres dauerhaftes Dichthalten also garantirt ist. —

Endlich 4) wäre noch hervorzuheben, dass man bei Anwendung dieser Construction, da keine Steege abzuziehen sind, mit kleineren Ventilen auskommt als da, wo solches der Fall ist, und kann man also auch billiger ein entsprechend grosses Ventil beschaffen.

Dimensionen der Ventile Fig. 1 bis 13 und Preisverzeichniss.

Diameter der Durchgangsöffnung	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	$5\frac{1}{2}$	6	7	8	9	10	11	12	15	18	in Zoll Rhld. in Millimeter.	
Flansch-Durchm.	$3\frac{1}{4}$	$3\frac{1}{2}$	4	$4\frac{1}{4}$	$4\frac{1}{2}$	5	6	$6\frac{1}{2}$	7	$7\frac{1}{2}$	8	$8\frac{1}{2}$	$9\frac{1}{4}$	10	11	12	$12\frac{1}{2}$	$13\frac{1}{2}$	$14\frac{1}{2}$	16	$17\frac{1}{4}$	19	$20\frac{1}{2}$	$23\frac{1}{2}$	$26\frac{1}{2}$	in Zoll Rhld. in Millimeter.	
Abstand des unteren Flantsches von Mitte des Seitenflantsches bei Eck-Ventilen	$2\frac{3}{8}$	$2\frac{3}{4}$	$3\frac{1}{8}$	$3\frac{1}{4}$	$3\frac{3}{8}$	$4\frac{1}{8}$	$4\frac{1}{2}$	$5\frac{1}{4}$	$5\frac{7}{8}$	$6\frac{1}{4}$	$6\frac{1}{2}$	7	$7\frac{1}{4}$	8	$8\frac{1}{2}$	9	$9\frac{1}{2}$	10	$10\frac{1}{2}$	11	$11\frac{3}{4}$	$12\frac{1}{4}$	$13\frac{1}{2}$	18	24	in Zoll Rhld. in Millimeter.	
Länge von Flantsch zu Flantsch	$3\frac{1}{2}$	$3\frac{3}{4}$	$4\frac{1}{4}$	$4\frac{1}{2}$	$5\frac{1}{8}$	$6\frac{1}{8}$	$6\frac{7}{8}$	$8\frac{3}{8}$	$9\frac{1}{4}$	10	11	$12\frac{1}{4}$	13	$13\frac{1}{4}$	14	15	16	18	20	22	24	26	28	33	36	in Zoll Rhld. in Millimeter.	
Ungefähres Gewicht																											Pfund.
Preis von Fig. 1, 2, 3	3	$3\frac{1}{2}$	$4\frac{1}{8}$	$5\frac{1}{8}$	$6\frac{3}{8}$	8	$9\frac{1}{8}$																				Thaler.
„ „ „ 4—11	3	$3\frac{1}{2}$	$4\frac{1}{8}$	$5\frac{1}{8}$	$6\frac{3}{8}$	8	$9\frac{1}{8}$	12	$13\frac{3}{4}$	$15\frac{3}{4}$	$18\frac{3}{4}$	23	$27\frac{1}{2}$	$32\frac{1}{2}$	$37\frac{1}{2}$	$42\frac{1}{2}$	$47\frac{1}{2}$	$57\frac{1}{2}$	$67\frac{1}{2}$	$77\frac{1}{2}$	90						„
„ „ „ 12—13								$10\frac{1}{2}$	$13\frac{1}{2}$	15	$17\frac{1}{2}$	$20\frac{3}{4}$	25	$29\frac{3}{4}$	35	$40\frac{1}{2}$	46	$51\frac{1}{4}$	$62\frac{1}{2}$	74	85	100	125	175	275	400	„
„ „ Fig. 1-7 in Metall	4	6	$7\frac{1}{2}$	$8\frac{1}{2}$	$12\frac{1}{2}$	17		von 2" an pro Pfd. $22\frac{1}{2}$ Sgr.																	„		
„ „ „ 8 u. 9 Speise-Ventil combinirt mit Absperr-Ventil in Eisen.	$6\frac{3}{8}$	$8\frac{1}{4}$	$9\frac{3}{8}$	$11\frac{3}{4}$	$14\frac{5}{8}$	$17\frac{1}{2}$	$20\frac{1}{2}$	$25\frac{1}{2}$	$29\frac{3}{4}$	$33\frac{1}{4}$	$39\frac{3}{8}$	48	$57\frac{1}{4}$													„	
Für Metallspindeln statt der schmiedeeisernen wird extra berechnet.				$\frac{1}{8}$				$\frac{3}{8}$				$1\frac{1}{8}$				$2\frac{3}{8}$											„

Der Abstand der Seitenflantsche von der Ventilmitte bei Eckventilen ist gleich der halben Länge von Flantsch zu Flantsch. Gegenseiben aus Schmiede-Eisen müssen extra bestellt werden und werden pro Pfd. mit $7\frac{1}{2}$ Sgr. geliefert.

Unter „Combinirtem Speise-Ventil“ wird ein Speise-Ventil (Retour-Ventil mit lose Kegel) Fig. 8 und ein Absperr-Ventil Fig. 9 verstanden. Natürlich kann die Anordnung auch umgekehrt vorgenommen werden, so dass Fig. 8 das Absperr-Ventil und Fig. 9 das Speise-Ventil wird. Mit dieser sehr empfehlenswerthen Anordnung kann man nach dem Kessel absperren und das Speise-Ventil öffnen, herausheben, reinigen.

Alle Ventile werden mit Dampf- und Wasserdruck probirt!

Die Ventile von $\frac{1}{2}$ " bis $1\frac{1}{4}$ " Diam. werden mit Metallkopfstück und Ueberwurfmutter, wie Fig. 1—5 zeigt, angefertigt.

„ „ „ $1\frac{1}{2}$ " „ $1\frac{3}{4}$ " „ „ „ Eisenkopfstück und Metallüberwurfmutter „ „ 6—9 „ „

„ „ „ 2" ab werden mit Eisenkopfstück und Metallstopfbüchse, wie Fig. 10—13 zeigt, angefertigt.

„ „ „ 2" ab werden auch, wie bei Fig. 12 und 13 angegeben, mit Säulen und aussenliegendem Gewinde angefertigt.

Die Spindeln aus Eisen, Sitz aus Metall, Kegel aus Rothguss, Hauptkörper aus Gusseisen!

Bei den eisernen Speise-Ventilen sind die Führungshülsen der Ventilkegel mit Metall ausgebuchst!

Dimensionen der Speise-Ventile nach Scholl Fig. 14 und Preisverzeichniss.

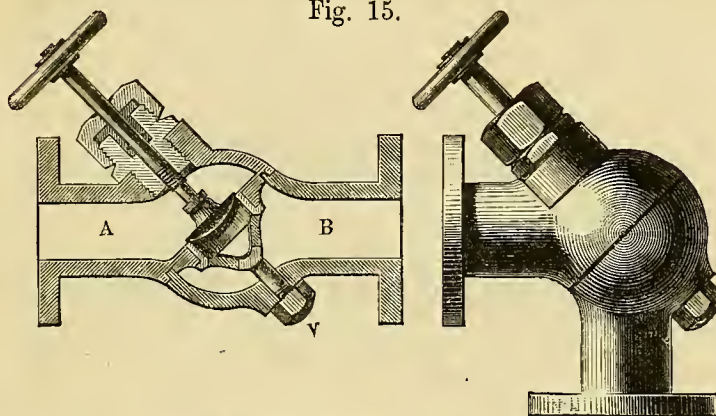
Diam. der Durchgangsöffnung	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	in Zoll Rhld. in Millim.	Bei den Ventilen nach Scholl ist die Führung der Ventilkegel unterwärts wie gewöhnlich. Der lose Speise-Ventilkegel kann mittelst Druckschraube n. Stellrad fest zugeedrückt werden.
Flansch-Durchmesser	4	$4\frac{1}{4}$	$4\frac{1}{2}$	5	6	$6\frac{1}{2}$	7	$7\frac{1}{2}$	8	in Zoll Rhld. in Millim.	
Abstand des unteren Flantsches von Mitte des Seitenflantsches	3	$3\frac{1}{8}$	$3\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{3}{4}$	$4\frac{1}{4}$	$4\frac{1}{2}$	$4\frac{3}{4}$	$4\frac{7}{8}$	in Zoll Rhld. in Millim.	
Abstand des Seitenflantsch von der Ventilmitte	5	$5\frac{1}{4}$	$5\frac{3}{4}$	6	$6\frac{1}{2}$	7	$7\frac{1}{2}$	$8\frac{1}{4}$	9	in Zoll Rhld. in Millim.	
Preis	5	$6\frac{1}{2}$	$8\frac{1}{2}$	10	12	$13\frac{1}{2}$	15	$17\frac{1}{2}$	$20\frac{1}{2}$	Thlr.	

NB. Die sämmtlichen Flantschen werden nur auf extra Bestellung und gegen extra Berechnung gebohrt geliefert. Gekrümmte Flantschen und extra grosse, werden möglichst vermieden und wo nöthig durch Extra-Stützen gegen billigste Berechnung erzielt. Wird Krümmung etc. dennoch direct vorgeschrieben, so tritt dafür extra Berechnung ein, welche meist theurer wird, und längere Lieferzeit erfordert, als die Aushilfe durch Stützen.

Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Fig. 15.



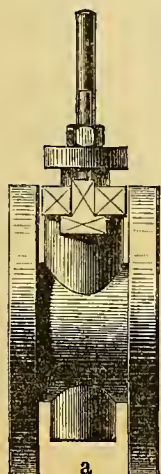
Patent Universal-Ventil.

Dieses in Fig. 15 im Durchschnitt und Ansicht dargestellte Ventil besteht aus zwei sich kugelig erweiternden unter 45° abgechrägten Hälften, die mit Flantschen zum weitem Anschluss versehen sind. Die eine Hälfte A besitzt eine Nuth, in deren Grunde ein Dichtungsring aus Leder oder Gummi eingelegt ist, die andere Hälfte B besitzt einen vorspringenden Rand, der bestimmt ist, in die Nuth bei A zu fassen und nach Anziehung der abgedichteten geschlossenen Mutter v beide Hälften fest und dicht mit einander zu verbinden, und in gewisser Lage zu fixiren. Die Spindel nebst Stellrad liegen gegen die Axe des Ganzen um 45° geneigt. — Man kann mittelst dieses Ventils schnell alle Winkel von 180° bis 90° bilden und dasselbe sowohl als Durchgangs-Ventil wie im Durchschnitt, als auch als Eckventil wie in Ansicht dargestellt, benutzen und dürfte sich die Anwendung dieser gewiss in vielen Fällen sehr bequemen und nützlichen Anordnung sehr empfehlen. Diese Ventile werden auch mit zwei Sechskantmuffen mit Innengewinde (Gasgewinde) versehen, geliefert!

Dimensionen und Preis-Verzeichniss.

Diameter der Durchgangsöffnung	{	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/2	3	in Zoll Rhld.
do.	{	13	20	26	33	39	46	52	64	78	in Millimeter.
Flantsch-Durchmesser	{	3 1/4	3 1/2	4	4 1/4	4 1/2	5	6	7	8	in Zoll Rhld.
do.	{	85	91	104	111	118	131	157	180	209	in Millimeter.
Länge von Flantsch zu Flantsch	{	6	6 3/4	7	7 3/4	8 1/4	9	9 1/2	10 1/2	12	in Zoll Rhld.
do.	{	168	176	183	213	216	235	248	274	314	in Millimeter.
Preis		4	5	6	7 1/2	10	12	14	16	18	Thlr. in Eisen mit Metallgarnirung.

Fig. 16.



Drosselklappen.

a. Seitenansicht, b. Kopfansicht.

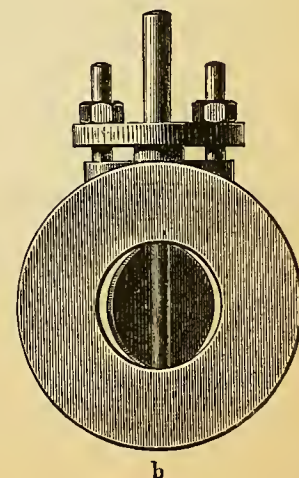
Dimensionen und Preis-Verzeichniss.

Diameter der Durchgangsöffnung	{	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	in Zoll Rhld.
do.	{	26	39	52	65	78	91	104	118	131	157	in Millim.
Flantsch-Durchmesser	{	4	4 1/2	6	7	8	8 1/2	9 1/4	10	11	12 1/2	in Zoll Rhld.
do.	{	104	118	157	180	209	222	242	262	288	327	in Millim.
Länge von Flantsch zu Flantsch	{	2 1/2	2 3/8	3 1/4	3 5/8	4	4 5/16	4 11/16	5 1/4	5 3/4	6 3/4	in Zoll Rhld.
do.	{	55	69	82	95	104	112	122	136	151	176	in Millim.
Preis		3 1/2	5	6 1/2	7 1/2	8 3/4	10	11	13	15	18	Thlr.

Die Stopfbüchse und die Klappe sind aus Metall.

Alle Flantschen werden nur auf extra Bestellung und gegen extra Berechnung gebohrt geliefert!

Fig. 16.



PEET'S PATENT-VENTILE

für

Dampf-, Wasser- und Gasleitungen.

NIEDERLAGE

für den

Europäischen Continent

(ausgenommen Frankreich)

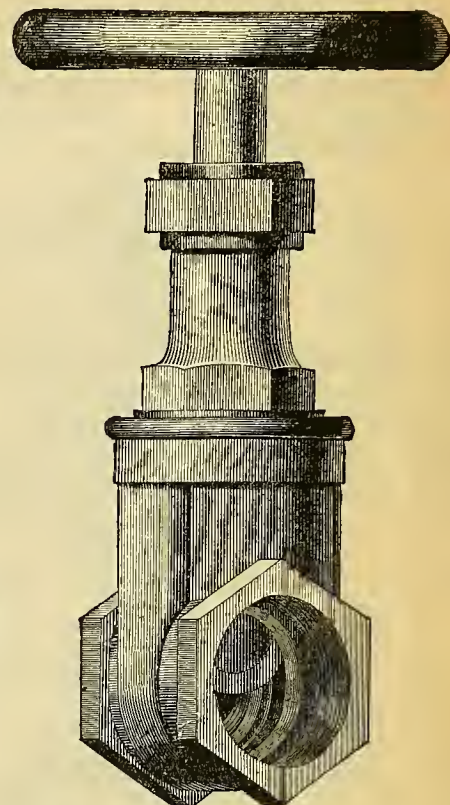
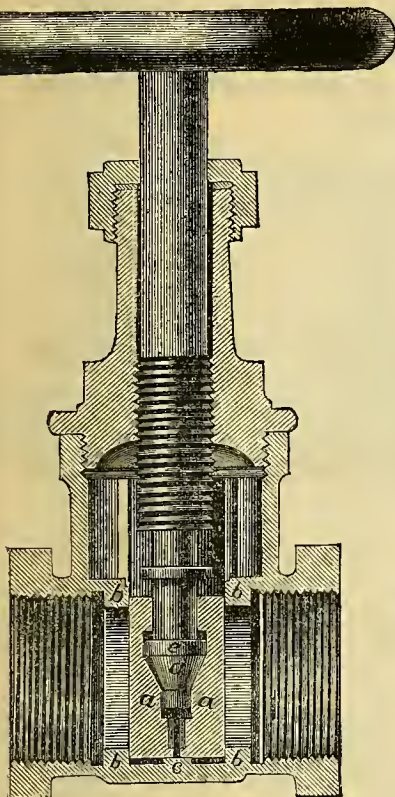
bei

Schäffer & Budenberg,

Maschinen- & Dampfkessel-Armatur-Fabrik

in

BUCKAU-MAGDEBURG.



General-Depot **Prag**,
Elisabethstrasse 635-1.

General-Depot **Wien**,
Opernring 10.

General-Depot **Moskau**,
Gross Brannaja, Maikowa's Haus.

Bei diesen Ventilen besteht der Schieber, (siehe Fig. oben) aus zwei Hälften, die durch einen Conus auseinander und gegen ihre respectiven Sitze gepresst werden und auf diese Weise den Verschluss bewerkstelligen. Dieselben gestatten dem Dampfe, Gas oder den Flüssigkeiten einen geraden ungehinderten Durchgang, im vollen Querschnitt der Röhre.

Schon seit lange sind diese Ventile durch die Amerikanische Regierung und durch Industrielle daselbst, in Anwendung gebracht und sind ebenfalls in England, sowohl bei der Marine als auch bei den grössten Schiff- und Maschinenbauern, Eisenbahn-, Wasser- und Gas-Compagnien, Brauern, Fabrikanten etc. im allgemeinen Gebrauch.

Zahlreiche Zeugnisse sprechen auf's Günstigste über die Vorzüge der Peet's Ventile.

Die Construction ist in Amerika und in den Europäischen Staaten patentirt.

Whitley Partners sind für Europa die Allein-Berechtigten zum Vertriebe und die alleinigen Fabrikanten, und haben laut Vertrag vom 1. Februar 1871, an die Unterzeichneten den Allein-Debit für den Europäischen Continent (ausgenommen Frankreich) übertragen.

Viele Industrielle des Continents haben bereits durch einzelne Bezüge, Kenntniss von der Vorzüglichkeit dieser Ventile genommen.

Wir erlauben uns, als die alleinigen Vertreter der Herren Whitley Partners, umstehendes Preis-Verzeichniss zu überreichen.

Assortirtes Lager halten in Magdeburg vorrätig und führen kleine Orders stets prompt vom Lager aus.

Grössere Bestellungen werden ab England direct unter Berechnung in englischen Original-Preisen, oder ab Magdeburg in Preuss. Courant-Preisen ausgeführt.

Gefällige Aufträge bitten zu adressiren an

Schäffer & Budenberg
in *Buckau-Magdeburg.*

Die Ventile Fig. 1—11 incl. sind ganz aus Kanonen-Metall gefertigt.

Fig. 1. mit Gewinde-Muff an beiden Enden. **Fig. 2.** mit Gewinde-Muff an einem und Gewinde-Zapfen am andern Ende. **Fig. 3.** mit Gewinde-Zapfen an beiden Enden. Alle zum Festschrauben an schmiedeeiserne Röhren. Die Gewinde von Fig. 1—4 incl. und 8—9 incl. sind Gasgewinde.

Fig. 1.	Innerer Durchmesser	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	engl. Zoll.
" 2.	Preis ab Magdeburg	2	2	$2\frac{5}{6}$	$3\frac{1}{2}$	$5\frac{1}{3}$	$7\frac{1}{2}$	$9\frac{5}{6}$	12	$16\frac{5}{6}$	$24\frac{1}{3}$	$41\frac{1}{3}$	$67\frac{1}{2}$	90	112	℞
" 3.	Preis ab Leeds	5/-	5/-	7/6	9/6	14/-	20/-	26/-	32/-	45/-	65/-	£5/10	£9	£12	£15	£ s.

Fig. 4.	Mit Muff an einem und mit Verschraubung am andern Ende, oder mit zwei Verschraubungen.															
" "	Innerer Durchmesser	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	engl. Zoll.
" "	Preis ab Magdeburg	$2\frac{5}{6}$	$3\frac{1}{4}$	4	$5\frac{1}{3}$	$7\frac{1}{2}$	$10\frac{1}{3}$	$14\frac{1}{3}$	$16\frac{2}{3}$	$24\frac{1}{3}$	$34\frac{2}{3}$	$50\frac{2}{3}$	75	105	131	℞
" "	Preis ab Leeds	7/6	8/6	10/6	14/-	20/-	27/6	38/-	45/-	65/-	92/6	£6/15	£10	£14	£17/10	£ s.

Fig. 5.	Mit runder oder ovaler gedrehter Flantsche an einem und Verschraubung am andern Ende.															
" "	Innerer Durchmesser	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	engl. Zoll.
" "	Preis ab Magdeburg	$3\frac{1}{2}$	$3\frac{2}{3}$	$5\frac{1}{6}$	$6\frac{1}{2}$	$9\frac{1}{3}$	$11\frac{1}{3}$	$16\frac{1}{2}$	$20\frac{2}{3}$	28	45	60	86	120	150	℞
" "	Preis ab Leeds	9/6	10/-	13/6	17/6	25/-	30/-	44/-	55/-	75/-	£6	£8	£11/10	£16	£20	£ s.

Fig. 6.	Mit zwei runden oder ovalen gedrehten Flantschen.															
Fig. 7.	Mit runder gedrehter oder ovaler Flantsche und Schnabel.															
" "	Innerer Durchmesser	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	engl. Zoll.
" "	Preis ab Magdeburg	$3\frac{1}{2}$	$3\frac{2}{3}$	$5\frac{1}{6}$	$6\frac{1}{2}$	$9\frac{1}{3}$	$11\frac{1}{3}$	$16\frac{1}{2}$	$20\frac{2}{3}$	28	45	60	86	120	150	℞
" "	Preis ab Leeds	9/6	10/-	13/6	17/6	25/-	30/-	44/-	55/-	75/-	£6	£8	£11/10	£16	£20	£ s.

Fig. 8.	Mit Muff oder Schranke an einem und mit runder oder ovaler Flantsche am andern Ende.															
8a.	Mit Muff oder Schranke an einem und Schnabel am andern Ende.															
" "	Innerer Durchmesser	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	engl. Zoll.
" "	Preis ab Magdeburg	$2\frac{5}{6}$	$3\frac{1}{4}$	4	$5\frac{1}{3}$	$7\frac{1}{2}$	$10\frac{1}{3}$	$14\frac{1}{3}$	$16\frac{5}{6}$	$24\frac{1}{3}$	$34\frac{2}{3}$	$50\frac{2}{3}$	75	105	131	℞
" "	Preis ab Leeds	7/6	8/6	10/6	14/-	20/-	27/6	38/-	45/-	65/-	92/6	£6/15	£10	£14	£17/10	£ s.

Fig. 9.	Mit Verschraubung an beiden Enden.															
" "	Innerer Durchmesser	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	engl. Zoll.
" "	Preis ab Magdeburg	4	$4\frac{1}{3}$	$5\frac{1}{3}$	7	10	$13\frac{1}{3}$	$18\frac{2}{3}$	$22\frac{1}{2}$	$31\frac{5}{6}$	$52\frac{1}{2}$	$67\frac{1}{2}$	$97\frac{1}{2}$	131	169	℞
" "	Preis ab Leeds	10/6	11/6	14/6	18/6	27/6	36/-	50/-	60/-	85/-	£7	£9	£13	£17/10	£22/10	£ s.

Fig. 10.	Mit verzierten conischen Enden für Bleiröhren etc.															
" "	Innerer Durchmesser	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	engl. Zoll.
" "	Preis ab Magdeburg	2	2	$2\frac{5}{6}$	$3\frac{1}{2}$	$5\frac{1}{3}$	$7\frac{1}{2}$	$9\frac{5}{6}$	12	$16\frac{5}{6}$	$24\frac{1}{3}$	$41\frac{1}{3}$	$67\frac{1}{2}$	90	112	℞
" "	Preis ab Leeds	5/-	5/-	7/6	9/6	14/-	20/-	26/-	32/-	45/-	65/-	£5/10	£9	£12	£15	£ s.

Fig. 11.	Mit langem Gewinde und Mutter. (Heerd-Hahn.)															
" "	Innerer Durchmesser	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	engl. Zoll.								
" "	Preis ab Magdeburg	$2\frac{5}{6}$	3	$3\frac{1}{2}$	$4\frac{1}{6}$	5	6	℞								
" "	Preis ab Leeds	7/6	8/-	9/6	11/-	13/-	16/-	£ s.								

Die Ventile Fig. 12—18 incl. sind aus Gusseisen mit Kanonen-Metall-Liederungen gefertigt.

Fig. 12.	Mit runden gedrehten Flantschen an beiden Enden.																		
" 13.	Mit runder gedrehter Flantsche und mit Schnabel.																		
" 14.	Mit runder gedrehter Flantsche und Verschraubungsende; oder ausgehöhlt, um Leitröhren daran zu befestigen.																		
" 15.	Mit zwei Mallenden ohne Gewinde.																		
" 16.	Mit Flantsch und Muff ohne Gewinde.																		
" 17.	Mit Muff und Einschlebungsende ohne Gewinde.																		
" 18.	Mit Flantsch und Einschlebungsende ohne Gewinde.																		
" "	Innerer Durchmesser	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	7	8	9	10	11	12	14	16	18	engl. Zoll.
" "	Preis ab Magdeburg	$11\frac{1}{3}$	15	$18\frac{2}{3}$	$22\frac{1}{2}$	$26\frac{1}{3}$	$31\frac{5}{6}$	$41\frac{1}{3}$	$52\frac{1}{2}$	$63\frac{2}{3}$	$76\frac{2}{3}$	$93\frac{2}{3}$	111	131	157	210	262	337	℞
" "	Preis ab Leeds	30/-	40/-	50/-	60/-	70/-	85/-	£5/10	£7	£8/10	£10/5	£12/10	£14/15	£17/10	£21	£28	£35	£45	£ s.

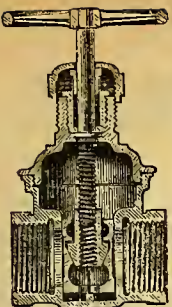
Fig. 19.	Ganz eisernes Gas-Ventil, von Construction wie Fig. 12, mit schmiedeeiserner Spindel.																		
" "	Innerer Durchmesser	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	7	8	9	10	11	12	14	16	18	engl. Zoll.
" "	Preis ab Magdeburg	$8\frac{1}{3}$	$11\frac{1}{3}$	15	$18\frac{2}{3}$	$22\frac{1}{2}$	$26\frac{1}{3}$	$31\frac{5}{6}$	$41\frac{1}{3}$	$48\frac{2}{3}$	$56\frac{1}{3}$	$69\frac{1}{3}$	$82\frac{1}{2}$	$97\frac{1}{2}$	120	150	187	262	℞
" "	Preis ab Leeds	22/6	30/-	40/-	50/-	60/-	70/-	85/-	£5/10	£6/10	£7/10	£9/5	£11	£13	£16	£20	£25	£35	£ s.

Fig. 19a.	Ganz eisernes Gas-Ventil, mit Muff an beiden Enden, mit schmiedeeiserner Spindel.															
" "	Innerer Durchmesser	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	engl. Zoll.										
" "	Preis ab Magdeburg	$10\frac{1}{3}$	$12\frac{1}{6}$	$16\frac{5}{6}$	$20\frac{2}{3}$	℞										
" "	Preis ab Leeds	27/6	32/6	45/-	55/-	£ s.										

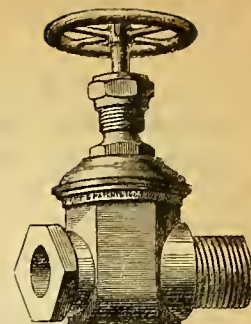
PEET'S PATENT-VENTILE.

Tafel VI. P. V.

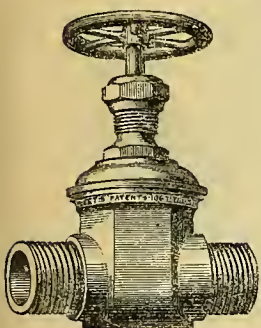
Kanonen-Metall Peet Ventile.



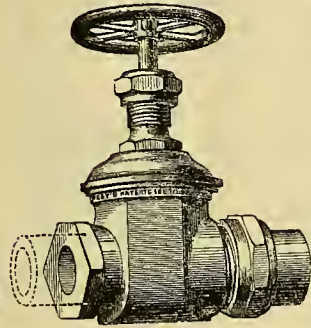
N° 1



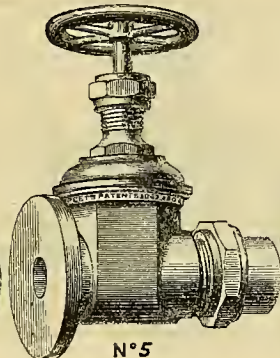
N° 2



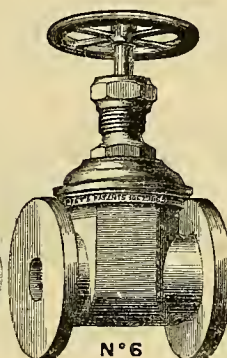
N° 3



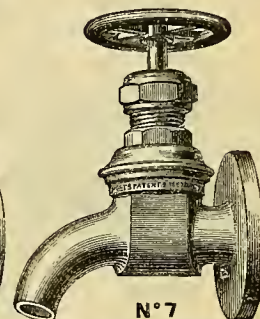
N° 4



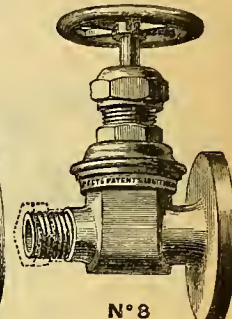
N° 5



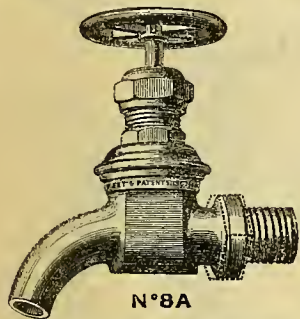
N° 6



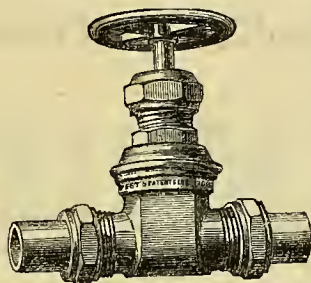
N° 7



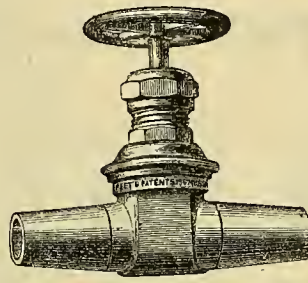
N° 8



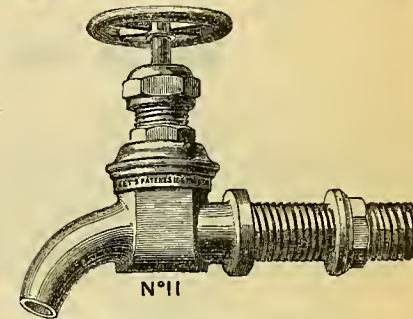
N° 8A



N° 9



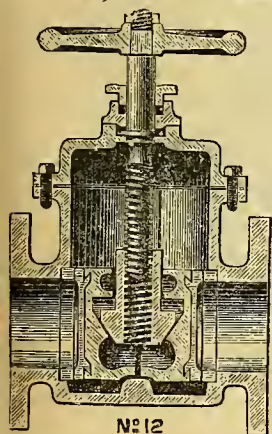
N° 10



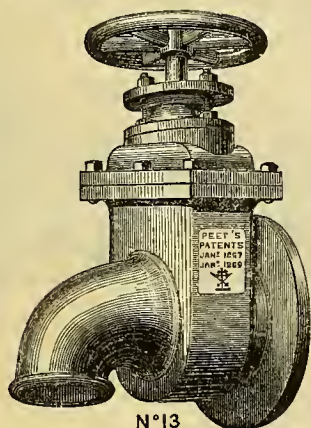
N° 11

Peet Ventile von Gusseisen mit Kanonen-Metall-Liederungen.

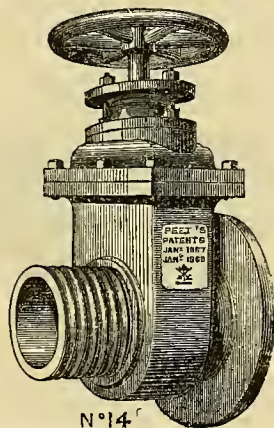
No. 12, 13 u. 14 sind mit Rad am Spindel. No. 15, 16, 17, 18 mit vierkantigem Spindelkopf (wenn nicht anders beordert.)



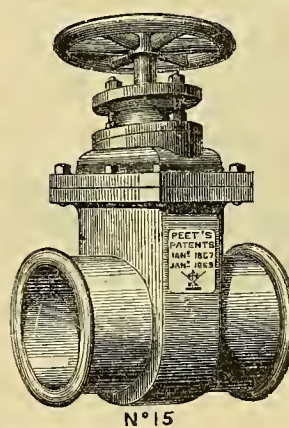
N° 12



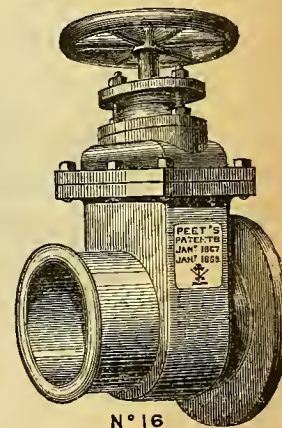
N° 13



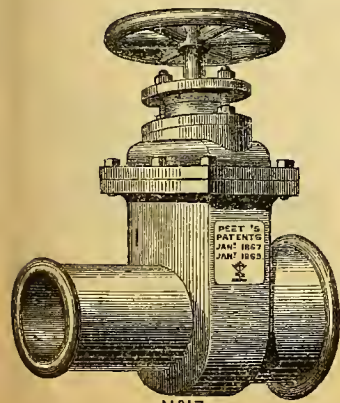
N° 14



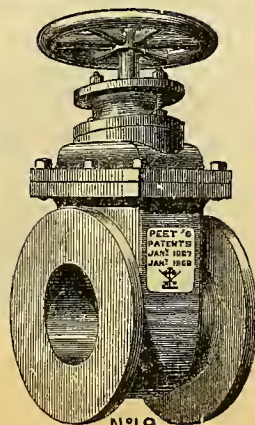
N° 15



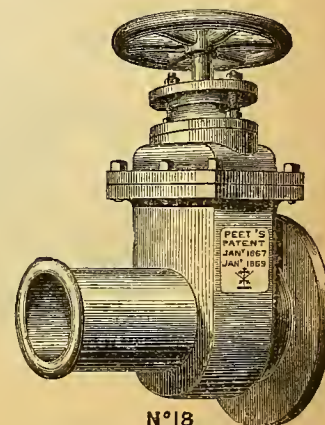
N° 16



N° 17



N° 19



N° 18

Peet Ventil ganz von Gusseisen.

Mit schmiedeisernem Spindel und rund gedrehter Flantsche.

Mit Order wird ersucht anzugeben, ob No. 19 mit Rad oder mit vierkantigem Spindelkopf sein soll.

No. 19 A. wird mit Rad geliefert.


Alle Peet's Ventile sind mit Flantschen von jeder beliebigen Grösse zu haben, jedoch werden Abweichungen von untenstehend verzelebneten Maassen extra berechnet. — Ohne Vorschrift besonderer Maasse werden die Ventile wie folgt versandt.

Maasse von Peet's Kanonen-Metall-Ventilen.

Innerer Durchmesser . . .	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	7	8	9	10	11	12	engl. Zoll. Millimeter.	
	10	12	19	25	32	38	44	50	63	76	88	101	127	152	178	204	228	254	280	305		
Flantsch-Durchmesser . . .	$2\frac{5}{8}$	$2\frac{5}{8}$	$3\frac{1}{8}$	$3\frac{3}{4}$	$4\frac{1}{2}$	$5\frac{1}{4}$	6	$6\frac{1}{2}$	7	$7\frac{1}{2}$	8	9	10	12	13	14	$15\frac{1}{2}$	17	18	19	engl. Zoll. Millimeter.	
	66	66	79	95	104	133	152	164	177	190	203	228	253	304	329	355	393	431	456	482		
Länge von Flantsch zu Flantsch	$2\frac{3}{4}$	$2\frac{3}{4}$	$3\frac{3}{8}$	4	$4\frac{3}{4}$	$5\frac{1}{2}$	$5\frac{3}{4}$	6	$6\frac{3}{8}$	$6\frac{3}{4}$	$7\frac{1}{4}$	engl. Zoll. Millimeter.										
	69	69	85	101	120	139	146	152	162	172	184											

Maasse von Peet's Gusseisen-Ventilen mit Flantschen.

Innerer Durchmesser . . .	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6	7	8	9	10	11	12	engl. Zoll. Millimeter.	
	38	50	63	76	88	101	127	152	178	204	228	254	280	305		
Länge von Flantsch zu Flantsch	$5\frac{1}{2}$	6	7	9	$9\frac{3}{4}$	$10\frac{1}{2}$	11	$11\frac{1}{2}$	$12\frac{1}{2}$	$13\frac{1}{2}$	$14\frac{1}{2}$	15	$15\frac{1}{2}$	16	engl. Zoll. Millimeter.	
	140	152	178	228	248	267	280	292	317	343	368	381	393	406		

Fabrikzeichen: „Peet's Patent, Jan. 1867 & Jan. 1869.“ 

Alle Peet's Ventile welche diese Marke nicht tragen, werden von den Patent-Inhabern confiscirt.

Aufträge für Russland und andere Nicht-Deutsche Staaten, werden ab England effectuirt.

Die Versendung ab England empfiehlt sich auch bei Engros-Bezügen für Deutschland, um durch Zuführung auf dem billigsten und direktestem Wege unnütze Transport- und Speditions-Gebühren zu verhüten.

Um Zeitverlust zu vermeiden, sollten alle Aufträge aus Nicht-Deutschen Staaten von Rimesse auf London oder Berlin, an die Order von Schäffer & Budenberg begleitet sein.

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Hähne.

Fig. 1.

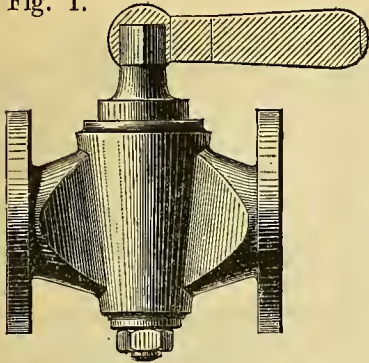


Fig. 2.

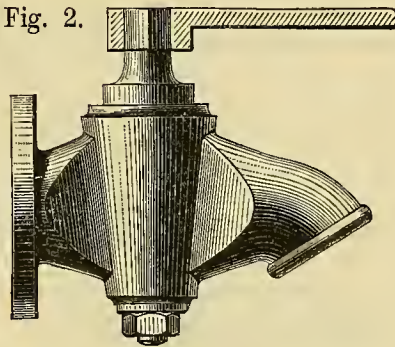


Fig. 3.

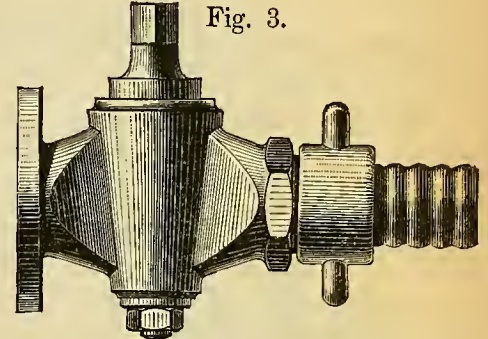


Fig. 4.

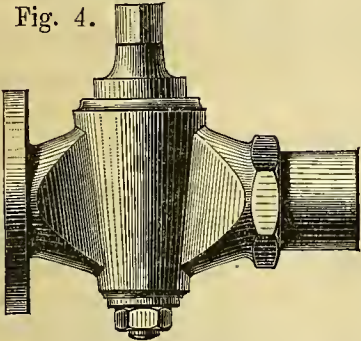


Fig. 7.

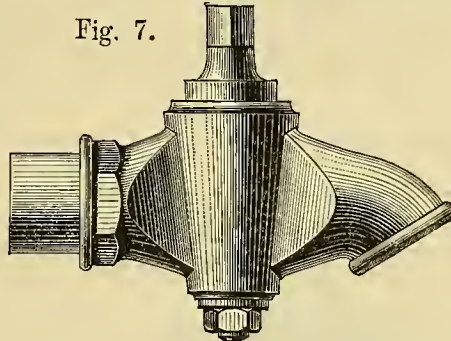


Fig. 11.

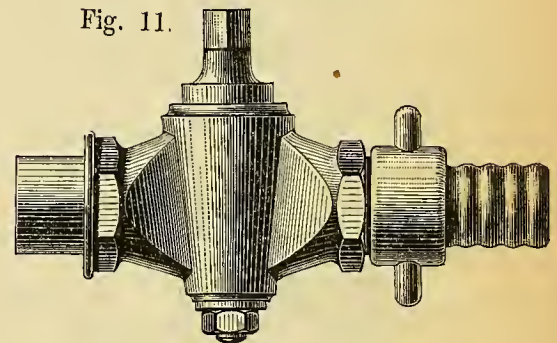


Fig. 5.

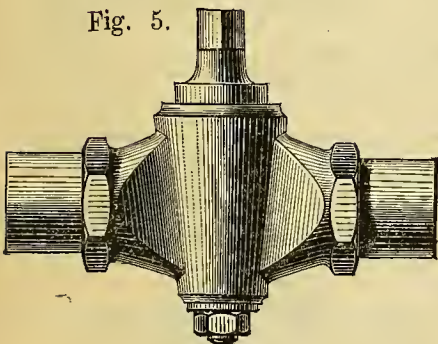


Fig. 12.

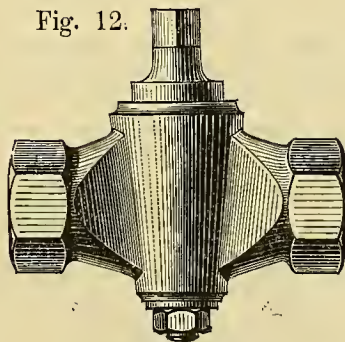


Fig. 13.

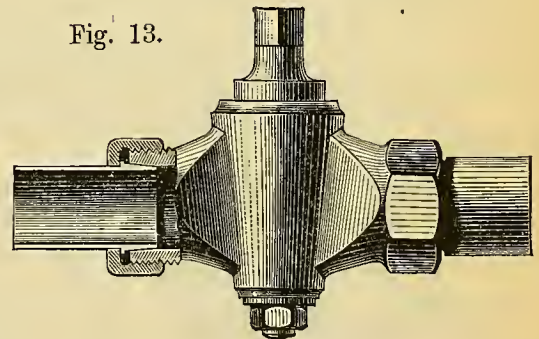


Fig. 8.

a

b

Fig. 14.

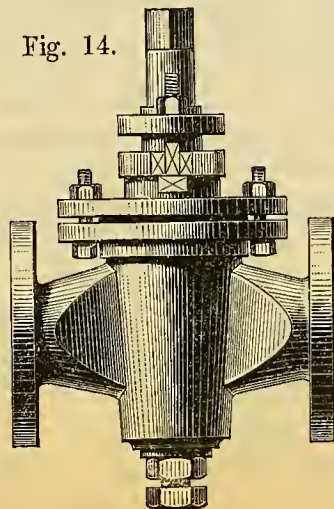
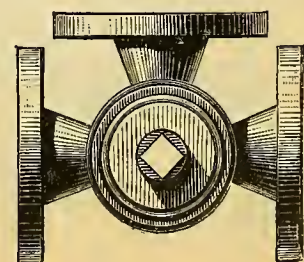


Fig. 9.



Bemerkungen zu Tafel VIA. Fig. 1 bis 14.

Die Ausführung der Hähne kann erfolgen:

- 1) in Messing mit Rothguss-Küken; 3) in Eisen mit Metall-Küken;
2) in Rothmetall mit Rothguss-Küken; 4) in Eisen mit Eisen-Küken.

Bei Bestellung ist daher genau anzugeben, in welchem Metall die Ausführung der Hähne erfolgen soll, auch ist zu bemerken, ob die Hähne nur mit Vier-Kant, oder mit Holzheft nach Fig. 1, oder mit Eisenschlüssel nach Fig. 2 gewünscht werden.

Dimensionen von Fig. 1, 2, 3, 4, 5, 7, 11, 12, 13 und Preis-Verzeichniss.

Diameter der Durchgangs- Öffnung	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{2}$	4	in Zoll rhld. in Millimeter.
Flansch-Durchmesser ...	2	$2\frac{5}{8}$	$3\frac{1}{4}$	$3\frac{1}{2}$	4	$4\frac{1}{4}$	$4\frac{1}{2}$	5	6	$6\frac{1}{2}$	7	$7\frac{1}{2}$	8	$8\frac{1}{2}$	$9\frac{1}{4}$	in Zoll rhld. in Millimeter.
do.	52	70	85	91	104	111	118	131	157	170	183	197	209	222	242	in Millimeter.
Länge von Flansch zu Flansch od. Bund zu Bund	$1\frac{7}{8}$	$2\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{3}{4}$	$4\frac{1}{4}$	$4\frac{1}{2}$	$5\frac{5}{8}$	$6\frac{1}{8}$	$6\frac{7}{8}$	$8\frac{3}{8}$	$9\frac{1}{4}$	10	11	$12\frac{1}{4}$	13	in Zoll rhld. in Millimeter.
	48	65	91	98	111	118	147	160	179	219	242	262	288	320	340	in Millimeter.
In Messing mit Rothguss- Küken	$1\frac{1}{3}$ Thlr.	$1\frac{3}{4}$ Thlr.	$2\frac{1}{3}$ Thlr.	per € 22			per € 20		per € $18\frac{1}{2}$			per € $16\frac{1}{2}$				Sgr.
In Rothmetall mit Roth- guss-Küken	$1\frac{1}{2}$ Thlr.	2 Thlr.	$2\frac{1}{2}$ Thlr.	per € 24			per € 22		per € $20\frac{1}{2}$			per € $18\frac{1}{2}$,
In Eisen mit Metall-Küken				$2\frac{1}{2}$	$3\frac{1}{2}$	$4\frac{1}{2}$	6	8	9	10	$11\frac{1}{2}$	15	17	20		Thlr.
In Eisen mit Eisen-Küken				2	3	3	5	6	7	8	9	$10\frac{1}{2}$	$12\frac{1}{2}$	15		Thlr.
Für Verschraubungen in Metall wie bei Fig. 3—11 und 13 per Stück extra	$\frac{3}{4}$ Thlr.	1 Thlr.	$1\frac{1}{3}$ Thlr.	Von hier ab je nach Metall und Diameter, Pfundpreise wie oben.												

Dimensionen der Dreiweghähne Fig. 9 und Preis-Verzeichniss.

Diameter der Durchgangs- öffnung	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{2}$	4	in Zoll rhld. in Millimeter.
Flansch-Durchmesser	2	$2\frac{5}{8}$	$3\frac{1}{4}$	$3\frac{1}{2}$	4	$4\frac{1}{4}$	$4\frac{1}{2}$	5	6	$6\frac{1}{2}$	7	$7\frac{1}{2}$	8	$8\frac{1}{2}$	$9\frac{1}{4}$	in Zoll rhld. in Millimeter.
do.	52	70	85	91	104	111	118	131	157	170	183	197	209	222	242	in Millimeter.
Länge von Flansch zu Flansch	$2\frac{1}{2}$	$3\frac{1}{4}$	4	$4\frac{3}{8}$	5	$5\frac{5}{8}$	$5\frac{7}{8}$	$6\frac{3}{8}$	$7\frac{1}{2}$	$8\frac{3}{8}$	$9\frac{1}{4}$	10	11	$12\frac{1}{4}$	13	in Zoll rhld. in Millimeter.
	65	85	104	114	131	140	155	173	197	219	242	262	288	320	340	in Millimeter.
Abstand des dritten Flantsches gleich der halben Länge von Flantsch zu Flantsch!																
In Messing mit Rothguss- Küken	$2\frac{1}{3}$ Thlr.	$2\frac{2}{3}$ Thlr.	4 Thlr.	per € 25			per € 20		per € 19			per € 18				Sgr.
In Eisen mit Rothguss- Küken				$3\frac{2}{3}$	$4\frac{2}{3}$	$6\frac{2}{3}$	$8\frac{2}{3}$	$9\frac{1}{2}$	$10\frac{2}{3}$	$12\frac{1}{2}$	15	$17\frac{1}{2}$				Thlr.

Dimensionen der Stopfbüchsen-Hähne, Fig. 14, und Preis-Verzeichniss.

Diameter der Durchgangs- Öffnung	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	in Zoll rhld. in Millimeter.	Die Construction dieser Hähne ist derartig gewählt, dass dieselben unter Betrieb (also bei Dampf- oder Flüs- sigkeitsdruck) ohne Gefahr verpackt werden können.
Flansch-Durchmesser ...	$4\frac{1}{2}$	6	7	8	$8\frac{1}{2}$	$9\frac{1}{4}$	in Zoll rhld. in Millimeter.	
do.	118	157	183	209	222	242	in Millimeter.	
Länge von Flansch zu Flansch	$5\frac{5}{8}$	$6\frac{7}{8}$	$9\frac{1}{4}$	11	$12\frac{1}{4}$	13	in Zoll rhld. in Millimeter.	
	147	179	242	288	320	340	in Millimeter.	
In Eisen mit Metall-Küken	10	12	15	18	22	25	Thlr.	
In Messing mit Rothguss- Küken	Pfundpreise wie bei den Dreiweghähnen.							

Die Hähne Fig. 8 sind Entlüftungs-Hähne für Pumpen und werden nur in einer Grösse mit $\frac{3}{8}$ Bohrung gefertigt. Fig. 8 b dient zum directen Aufschrauben auf den Cylinder-Deckel, Fig. 8 a zum seitlichen Einschrauben an den Pumpkörper. — Preis pr. Stück 3 Thlr.

Bemerkung: Alle Flantschen werden nur auf extra Bestellung und gegen Berechnung gebohrt geliefert — gekrümmte Flantschen sind möglichst zu vermeiden und werden durch besonders angeschraubte Stützen erzielt — da sonst Modell-änderungen erforderlich sind, welche sich höher berechnen als solche Stützen und sehr lange Lieferzeiten erfordern. An keinem Gewindezapfen wird ohne Bestellung Gewinde angeschnitten.

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Hähne nach englischen Modellen.

Fig. 21.

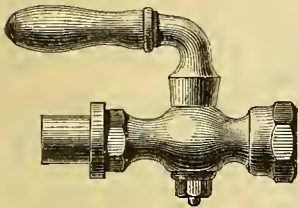


Fig. 22.

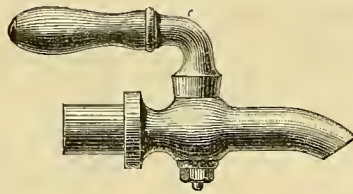


Fig. 23.

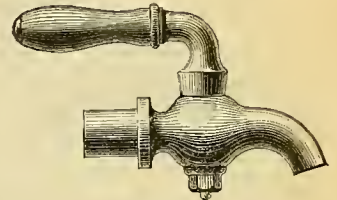


Fig. 25.

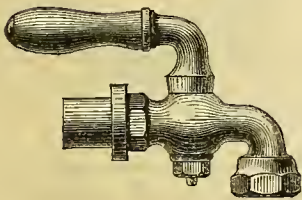


Fig. 26.

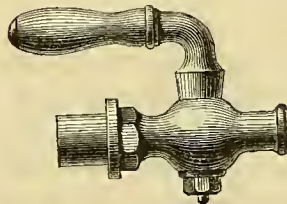


Fig. 24.

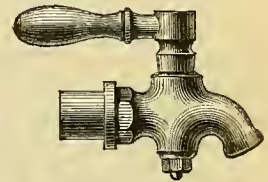


Fig. 27.

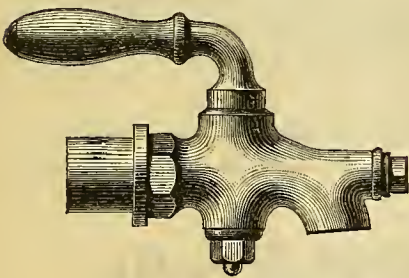


Fig. 29.

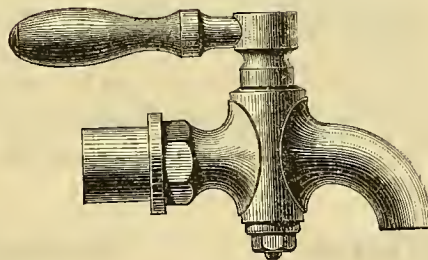


Fig. 28.

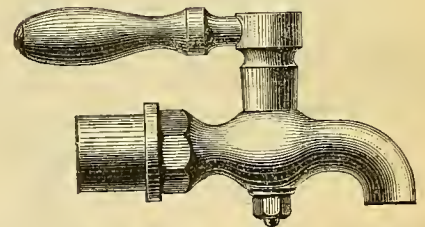


Fig. 30.

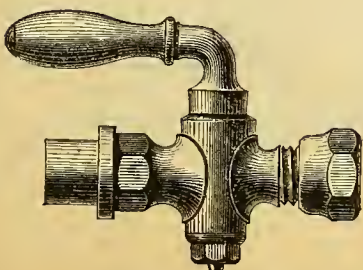


Fig. 31.

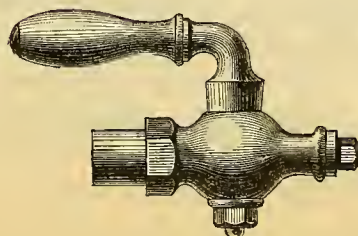
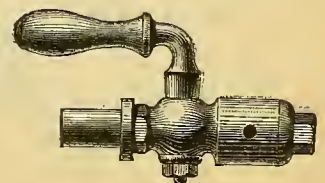


Fig. 32.



Bemerkungen zu Tafel VI A. Fig. 21 bis 32.

Bezeichnungen der Hähne nach englischem Modell.

- Fig. 21. Hahn mit rundem Körper, geradem Ausfluss und Verschraubung.
- Fig. 22. Hahn mit rundem Körper und krummem Auslauf.
- Fig. 23. Hahn mit rundem Körper und krummem Auslauf.
- Fig. 24. Hahn mit krummem Auslauf und Wulst daran.
- Fig. 25. Hahn mit rundem Körper, krummem Auslauf und Verschraubung.
- Fig. 26. Hahn mit rundem Körper, gradem Auslauf und Wulst.
- Fig. 27. Hahn mit krummem Auslauf, flachem Körper und Reinigungsschraube.
- Fig. 28. Hahn mit krummem Ausfluss und rundem Körper.
- Fig. 29. Hahn mit krummem Ausfluss und flachem Körper.
- Fig. 30. Hahn mit flachem Körper und Verschraubung.
- Fig. 31. Cylinder-Ablass-Hahn.
- Fig. 32. Schnuffel-Ventil.

Dimensionen und Preis-Verzeichniss.

Probirhähne.

	Fig. 21.		Fig. 22.		Fig. 23.		Fig. 24.		Fig. 25.		Fig. 26.																
	Zoll	Mm	Zoll	Mm	Zoll	Mm	Zoll	Mm	Zoll	Mm	Zoll	Mm	Zoll	Mm													
Durchgangsöffnung	$\frac{1}{8}$	3	$\frac{3}{16}$	5	$\frac{3}{8}$	10	$\frac{3}{16}$	5	$\frac{3}{8}$	10	$\frac{1}{8}$	3	$\frac{3}{16}$	5	$\frac{1}{4}$	6											
Durchmesser des Zapfens	$\frac{7}{16}$	11	$\frac{3}{4}$	20	$\frac{11}{16}$	18	$\frac{9}{16}$	15	$\frac{11}{16}$	18	$\frac{11}{16}$	18	$\frac{9}{16}$	15	$\frac{3}{4}$	20											
Länge des Zapfens	$\frac{5}{8}$	16	$\frac{3}{4}$	20	1	26	$\frac{3}{4}$	20	1	26	$\frac{11}{16}$	18	$\frac{3}{4}$	20	$\frac{9}{16}$	15											
Preis per Dutzend	16		17		13		13 $\frac{1}{2}$		18		13 $\frac{1}{2}$		18		22 $\frac{1}{2}$		18		24		10		15		20		Thaler.

Durchgangshähne.

	Fig. 27.		Fig. 28.		Fig. 29.		Fig. 30.																				
	Zoll	Mm	Zoll	Mm	Zoll	Mm	Zoll	Mm	Zoll	Mm																	
Durchgangsöffnung	$\frac{1}{2}$	13	$\frac{5}{8}$	16	$\frac{3}{4}$	20	$\frac{1}{2}$	13	$\frac{5}{8}$	16																	
Durchmesser des Zapfens	$\frac{15}{16}$	25	$1\frac{3}{16}$	31	$1\frac{5}{16}$	31	$1\frac{5}{16}$	34	$1\frac{3}{8}$	29																	
Länge des Zapfens	$\frac{13}{16}$	21	$1\frac{1}{8}$	29	$1\frac{1}{16}$	27	$1\frac{5}{16}$	34	$1\frac{1}{4}$	32																	
Preis per Dutzend	24		30		36		24		30		34		18		20		26		30		32		24		30		Thaler.

Cylinder-Ablasshähne.

Schnuffel-Ventil.

	Fig. 31.				
	Zoll	Mm.	Zoll	Mm.	
Durchgangsöffnung	$\frac{3}{8}$	10	$\frac{1}{2}$	13	
Durchmesser des Zapfens	$\frac{7}{8}$	23	$1\frac{1}{16}$	18	
Länge des Zapfens	$\frac{7}{8}$	23	$\frac{3}{4}$	20	
Preis per Dutzend	24		30		Thaler.

	Fig. 32.				
	Zoll	Mm.	Zoll	Mm.	
Durchmesser des Ventilgehäuses	1	26	$1\frac{3}{16}$	21	
Durchmesser des Zapfens	$\frac{9}{16}$	15	$\frac{1}{2}$	13	
Länge des Zapfens	$\frac{7}{8}$	23	$\frac{5}{8}$	16	
Preis per Dutzend	24		30		Thaler.

Bemerkung. Die hier gegebenen Bezeichnungen sind die englischen Benennungen, es schliesst das natürlich eine willkürliche Verwendung der Hähne nicht aus.

Kein Gewindepapfen wird ohne Extra-Bestellung mit Gewinde versehen.
Ausführung in bestem engl. Rothguss!

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN, Lower Kingstr. 23. Hohestr. 202. Elisabethstr. 655-1. Opernring 10.

Für Zwecke der Wasserleitungen.

Schwimmkugel- und Closet-Hahn.

Gummi-Niederschraub- und Durchgang-Hähne.

Schwimmer-Ventile für Bassins.

Fig. 2.

Fig. 1.

Fig. 12.

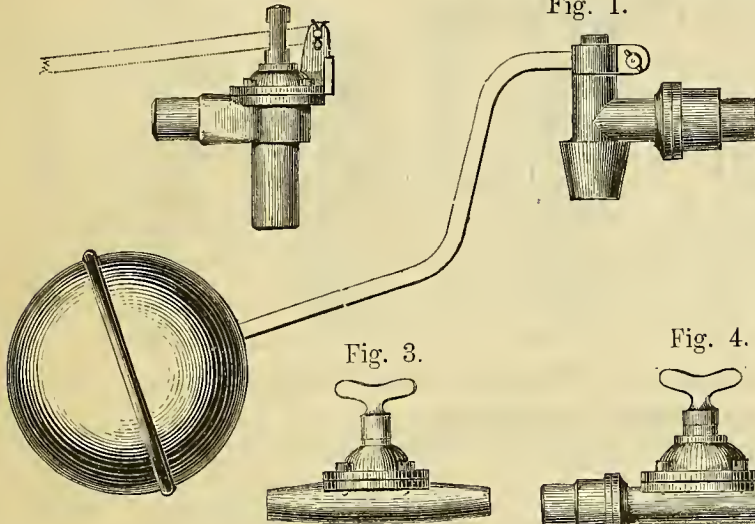


Fig. 3.

Fig. 4.

Fig. 11.

Fig. 10.

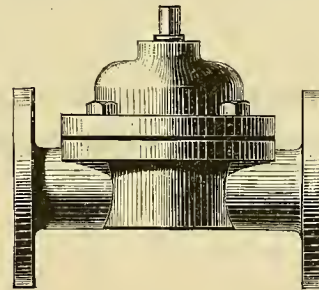
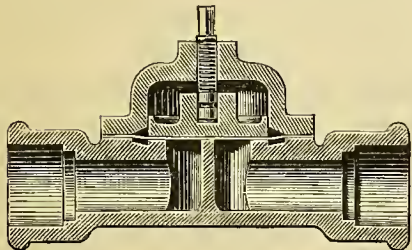
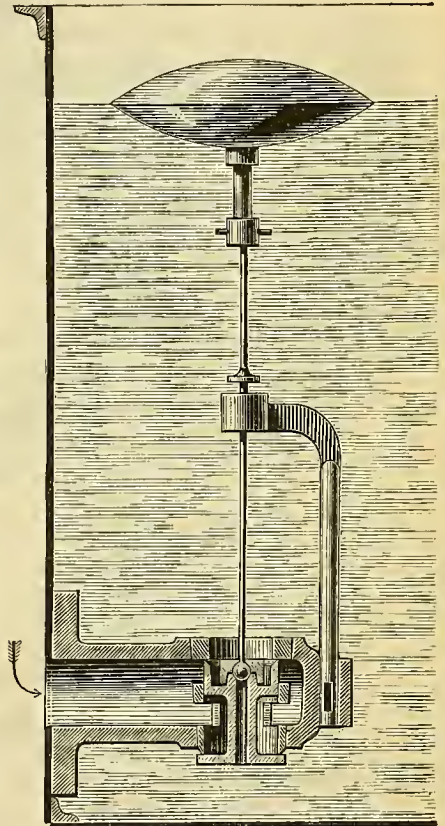


Fig. 5.

Fig. 6.

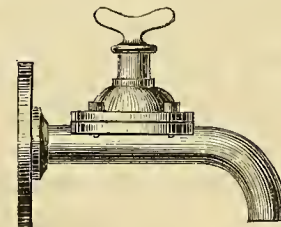
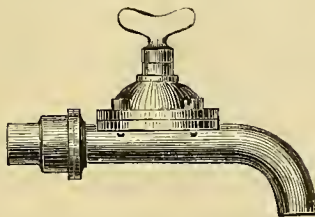
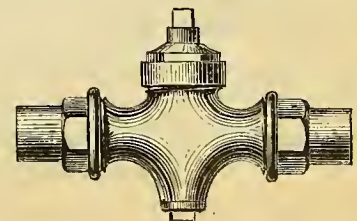
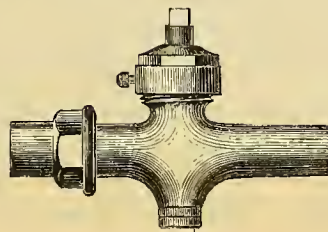
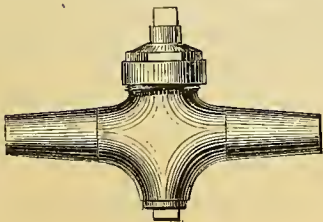


Fig. 7.

Fig. 8.

Fig. 9.



Bemerkungen zu Tafel VI B, Fig. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.

Fig. 1. Schwimmkugel-Hahn.

Dimensionen und Preis-Verzeichniss.

Durchgangsöffnung	$\frac{3}{4}$	1	$1\frac{1}{2}$	Zoll rhld.
do.	20	26	39	Millimeter.
Preis	$2\frac{1}{2}$	$4\frac{1}{2}$	$10\frac{1}{2}$	Thlr. complet mit Kugel und Hebel.

Fig. 2. Closet-Hahn

wird nur in einer Grösse von $\frac{1}{2}$ " \ominus = 13 Mm. \ominus angefertigt zu $1\frac{1}{6}$ Thlr. pro Stück.

Fig. 3, 4, 5, 6. Gummi-Niederschraub-Hähne von Messing. Dimensionen und Preis-Verzeichniss.

Durchgangsöffnung	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	in Zoll rhld.
do.	9	13	20	26	33	39	in Millimetern.
Flantschdurchmesser	$2\frac{5}{8}$	$3\frac{1}{4}$	$3\frac{1}{2}$	4	$4\frac{1}{4}$	$4\frac{1}{2}$	in Zoll rhld.
do.	70	85	91	104	111	118	in Millimetern.
Preis Fig. 3	$\frac{5}{6}$	1	$1\frac{1}{3}$	$2\frac{1}{6}$	4	6	Thlr. pro Stück.
do. Fig. 4	$1\frac{1}{6}$	$1\frac{1}{3}$	2	$2\frac{5}{6}$	5	7	Thlr. „ „
do. Fig. 5	$\frac{5}{6}$	$1\frac{1}{2}$	$1\frac{7}{12}$	$2\frac{1}{2}$	$4\frac{1}{3}$	$6\frac{1}{3}$	Thlr. „ „
do. Fig. 6	$1\frac{1}{4}$	$1\frac{2}{3}$	$2\frac{5}{12}$	$3\frac{2}{3}$	$5\frac{1}{2}$	8	Thlr. „ „

Fig. 7, 8, 9. Durchgangs-Hähne in Metall mit Stopfbüchse. Dimensionen und Preis-Verzeichniss.

Durchgangsöffnung	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	in Zoll rhld.
do.	13	20	26	33	39	in Millimetern.
Preis Fig. 7	$1\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{5}{6}$	6	$7\frac{1}{3}$	Thlr. pro Stück.
do. Fig. 8	$1\frac{7}{12}$	$2\frac{1}{12}$	$3\frac{1}{12}$	$6\frac{1}{4}$	$7\frac{2}{3}$	Thlr. „ „
do. Fig. 9	$1\frac{5}{6}$	$2\frac{1}{2}$	$3\frac{1}{2}$	7	$8\frac{2}{3}$	Thlr. „ „

Fig. 10 und 11. Gumminiederschraub-Hähne in Eisen. Dimensionen und Preis-Verzeichniss.

Durchgangsöffnung	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	in Zoll rhld.
do.	26	33	39	46	52	59	65	72	78	in Millimetern.
Flantsch-Durchmesser	4	$4\frac{1}{4}$	$4\frac{1}{2}$	5	6	$6\frac{1}{2}$	7	$7\frac{1}{2}$	8	in Zoll rhld.
do. do.	104	111	118	131	157	170	180	197	209	in Millimetern.
Länge von Flantsch zu Flantsch	6	7	8	$8\frac{3}{4}$	$9\frac{1}{2}$	$10\frac{1}{4}$	11	12	13	in Zoll rhld.
Länge von Muffe zu Muffe	157	183	209	229	248	268	288	314	340	in Millimetern.
Länge von Muffe zu Muffe	$7\frac{1}{2}$	9	10	11	12	$12\frac{1}{2}$	14	$15\frac{1}{2}$	$16\frac{1}{2}$	in Zoll rhld.
	197	235	262	288	314	327	366	406	432	in Millimetern.
Preis :	4	5	6	8	$10\frac{2}{3}$	$13\frac{1}{3}$	16	18	20	Thlr. pro Stück.

Bemerkung: Die Construction dieser Gummi-Niederschraub-Hähne ist, wie aus Fig. 11 ersichtlich, derartig gewählt, dass beide Oefnungen von der Schlussplatte gedeckt werden, was bei den früheren Constructionen nicht der Fall. Es können daher diese neuen Hähne auch als Durchgangs-Hähne verwendet werden, mit Druck auf beiden Seiten, da der Gummi allein demselben hier nicht zu widerstehen braucht.

Fig. 12. Schwimmer-Ventile für Bassins. Dimensionen und Preis-Verzeichniss.

Durchgangsöffnung	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	in Zoll rhld.
do.	26	39	52	65	78	91	104	in Millimetern.
Preis incl. Schwimmer und 2' Stange	$7\frac{1}{2}$	$8\frac{1}{2}$	$12\frac{1}{2}$	18	23	27	$31\frac{1}{2}$	Thlr. pro Stück.

Bemerkung: Diese Ventile eignen sich vorzüglich zur Normirung eines bestimmten Niveaus in Wasserbassins. — Constructionen aus Zeichnung verständlich.

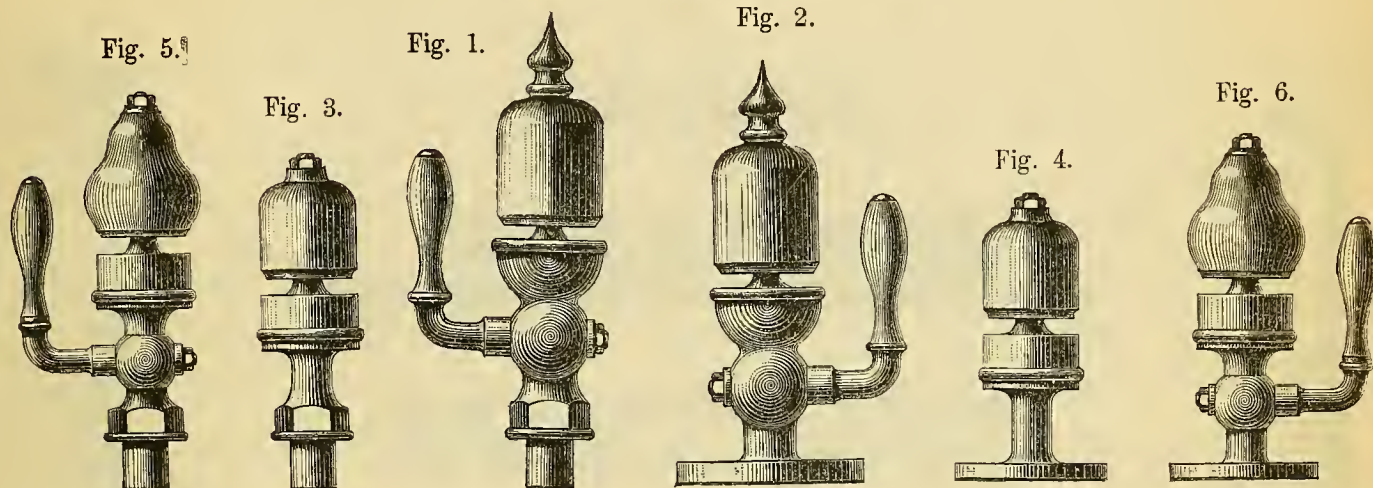
Flantsch-Durchmesser wie für die entsprechenden Durchgänge Fig. 10.

Länge der Stange ist bei Bestellung anzugeben. — Gebohrte Flantschen und extra grosse werden extra berechnet.

Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Dampf-Pfeifen.



Bezeichnung, Dimensionen und Preis-Verzeichniss.

Diameter der Glocke im Dampfiring gemessen.	1½	1¾	2	2½	3	4	Zoll.
	39	46	52	65	78	104	Millim.
Flantschdurchmesser	2¾	3½	3¾	3½	3¾	4¼	Zoll.
	72	81	85	91	98	111	Millim.
Zapfendurchmesser	⅞	⅞	1	1	1½	1¼	Zoll.
	23	23	26	26	29	33	Millim.
Zapfenlänge	1	1	1	1	1½	1¼	Zoll.
	26	26	26	26	29	33	Millim.
Preis der Scharp'schen Construction:							
nach Fig. 1 mit Hahn u. Gewindezapfen	4½	6	8	10	14	20	Thlr.
„ „ 2 „ do. „ Flantsch.....	4½	6	8	10	14	20	„
„ „ 3 ohne Hahn m. Gewdezapfen	2½	4	6	8	10	14	„
„ „ 4 „ do. „ Flantsch....	2½	4	6	8	10	14	„
Preis der Carlsruher Construction, heulend:							
nach Fig. 5 mit Hahn u. Gewindezapfen	4½	6½	9½	12½	16	21	„
„ „ 6 „ do. „ Flantsch.....	4½	6½	9½	12½	16	21	„

Anmerkung. Gebohrte Flantschen und extra grosse werden nur auf besondere Bestellung und gegen extra Berechnung geliefert.

Gewinde an Gewindezapfen werden ebenfalls nur auf extra Bestellung und gegen extra Berechnung angeschnitten. Es empfiehlt sich bei Bestellung den Dampfdruck anzugeben, bei welchem die Pfeife functioniren soll.

Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

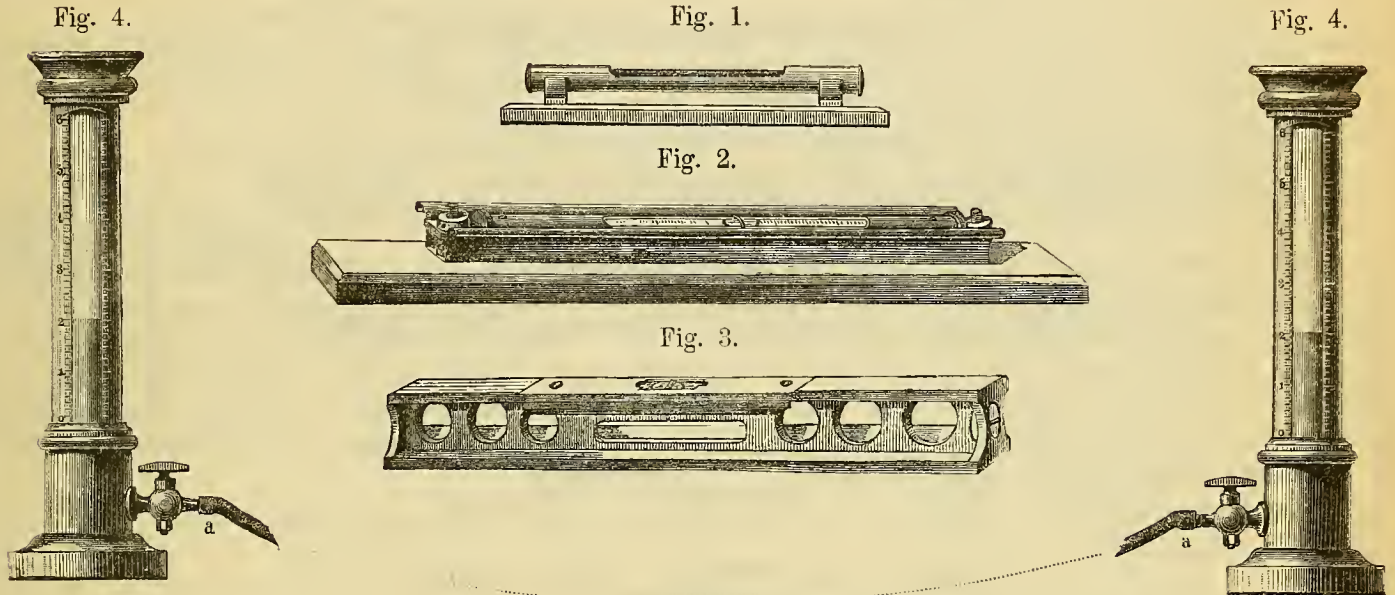


Fig. 1 u. 2 einfache Wasserwaage, Fig. 3 Doppel-Wasserwaage,
 zum Gebrauch bei Aufstellung von Maschinen.

Fig. 4 Schlauchwaage.

Fig. 1 einfache Wasserwaage, Platte von Metall und ganz in Metall gefasst, im allgemeinen wie Fig. 2 ausgeführt, jedoch ohne Adjustirschrauben und ohne Schutzblech. Ist ihrer Stabilität, geringen Grösse wegen (Taschenformat) sehr bequem zu transportiren und auf Montagen mit zu führen.

Grösse der Ausführung mit 6" = 157 Mm. langer Platte 2½ Thlr.

Fig. 2 einfache Wasserwaage oder Libelle, besteht aus einer gerade geschliffenen eisernen Platte und einer mit zwei Adjustirschrauben darauf befestigten, oben geschützten Messingröhre; in dieser befindet sich die mit Eintheilung versehene, ausgeschliffene Glasröhre mit Luftblase. Zum Schutze der Glasröhre und gleichzeitig zur bequemen Handhabung des Instruments sind seitwärts der Messingröhre Blechstreifen auf der eisernen Platte angebracht.

Wird in zwei Grössen ausgeführt mit 12" = 314 Mm. langer Platte 6 Thlr.

„ 6" = 157 Mm. „ „ 4 Thlr.

Bemerkungen zu Tafel VIe.

Die Patent-Schlauch- und Rohrkupplung besteht im wesentlichen aus zwei sich kuglich erweiternden unter 45° abgeschrägten Theilen A und B, die zur Aufnahme von Schläuchen oder zur Verbindung von Rohren dienen, also bald wellenförmig endigen, bald mit Sechskant und Innengewinde, bald mit Flantschen etc. versehen sind. Der Theil A, vergl. Fig. 1, ist mit Nuth zur Aufnahme eines Dichtungsringes von Leder oder Gummi, der Theil B ist mit Vorsprung versehen, welcher dazu bestimmt ist, in die Nuth zu fassen und auf den Dichtungsring zu drücken. Beide Theile werden durch einen Bügel C, Fig. 1, oder mittelst durchgehender Schraube, vergl. Fig. 5, zusammengezogen. Die grosse Anwendbarkeit dieser Kupplung liegt auf der Hand und möchte besonders für Spritzenschläuche, Strassen-, Garten- und Wiesenbewässerungen sehr zu empfehlen sein und überall da, wo man rasch Winkel zu bilden hat (Kupplung für Indicator-Montagen, vergl. Tafel I, Fig. D) deren Lösung ab und zu nothwendig erscheint, provisorische Leitungen etc.

Gegen ähnliche Kupplungen oder Verschraubungen möchten folgende Vorzüge besonders hervorzuheben sein:

- 1) Die Verbindungen damit lassen sich äusserst schnell und gut dicht herstellen und ebenso schnell wieder lösen.
- 2) Die Verbindung gestattet jede Winkelbildung von 180—90°.
- 3) Für Schläuche und Rohre stellt sich diese Verbindung bedeutend billiger als gewöhnliche Verbindungen mittelst Ueberwurfmutter, und ist dauerhafter als diese.

Bezeichnung.

Fig. 1.	Patent-Universal-Kupplung	mit 2 Schlauchwellen-Ansätzen.	
Fig. 2.	do.	do.	mit 1 Flantsch und 1 Schlauchwellen-Ansatz.
Fig. 3.	do.	do.	mit 2 Flantschen.
Fig. 4.	do.	do.	mit 2 Sechskant und Innengewinde für Gasrohre.
Fig. 5.	do.	do.	mit einem Sechskant und Innengewinde, und einem Schlauchwellen-Ansatz.
Fig. 6.	do.	do.	mit 2 conischen Zapfen zum Anflöthen von Rohren.

Dimensionen und Preis-Verzeichniss.

Diameter der Durchgangsöffnung....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	Zoll Rhld.	}	Ausführung in gutem Metall.
do.	9	13	20	26	33	39	46	52	59	65	72	Millimeter.		
Länge von Flantsch zu Flantsch oder Bund zu Bund	$2\frac{3}{4}$	$3\frac{3}{4}$	$4\frac{3}{4}$	$5\frac{3}{4}$	$6\frac{3}{4}$	$7\frac{3}{4}$	$8\frac{5}{8}$	$9\frac{5}{8}$	$10\frac{5}{8}$	$11\frac{1}{2}$	$12\frac{3}{8}$	Zoll Rhld.		
Flantsch-Durchmesser	$2\frac{5}{8}$	$3\frac{1}{4}$	$3\frac{1}{2}$	4	$4\frac{1}{4}$	$4\frac{1}{2}$	5	6	$6\frac{1}{2}$	7	$7\frac{1}{2}$	Zoll Rhld.		
do.	70	85	91	104	111	118	131	157	170	183	197	Millimeter.		
Passend zu Schläuchen von innerer Weite von	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	Zoll Rhld.		
do.	13	20	26	33	39	46	52	59	65	72	78	Millimeter.		
Preis: Fig. 1 und 6	1-6	1-13	1-22 $\frac{1}{2}$	2-5	2-20	3	3-15	4	4-20	6	7-15	}	Thaler und Silbergroschen.	
Fig. 4 und 5	1-10	1-18	1-27 $\frac{1}{2}$	2-13	3-6	3-22 $\frac{1}{2}$	4-15	4-20	6-10	7	7-22 $\frac{1}{2}$			
Fig. 2 und 3	1-12	1-22 $\frac{1}{2}$	2	2-25 $\frac{1}{2}$	3-19	4-5	5-5	5-15	6-22 $\frac{1}{2}$	7 $\frac{1}{2}$	9			

Bemerk. Wird bei Bestellung nicht angegeben, in welcher Weise das Zusammenziehen erfolgen soll, also ob mit durchgehender Schraube und sechseckigen geschlossenen Muttern, oder desgl. Flügelmuttern nach Fig. 6, so wird die Einrichtung stets mit dem Bügel C Fig. 1 getroffen.

Fig. 7 zeigt in dem Schlauch- und Rohrwagen, für Zwecke der Bewässerung, eine Anwendung dieser Patentkupplung. Diese Einrichtung besteht in einem leichten Gestell, das zur Aufnahme von Röhren aus Schmiede-Eisen dient, deren Weite vom Zweck der Anlage abhängt. Dieses Gestell ruht auf 2 leicht durchlenkbaren ca. 4" ⊕ Rollen von ca. 2 $\frac{1}{2}$ " Breite. Die Enden der Rohre werden armirt einerseits mit Schlauchenden und Universalkupplung, andererseits mit direct aufgeschraubten Universalkupplungen, so dass eine ganze Reihe solcher Rohre mit Wagen versehen, aneinander gekuppelt werden können und von einer Quelle (Wasserleitung) die Leitung bequem in weiten Kreisen von dem das Spritzenrohr handhabenden zu führen ist. Es empfehlen sich für diesen Zweck auch ganz besonders noch unsere Gummi-hähne, Tafel VI B. Fig. 9 u. 10, unten am Standrohr. **Preise nach Vereinbarung der Anlage.**

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,

Lower Kingstr. 23.

Rohestr. 202.

Elisabethstr. 655-1.

Opernring 10.

Sicherheits-Ventile und Federwaagen.

Fig. 5.

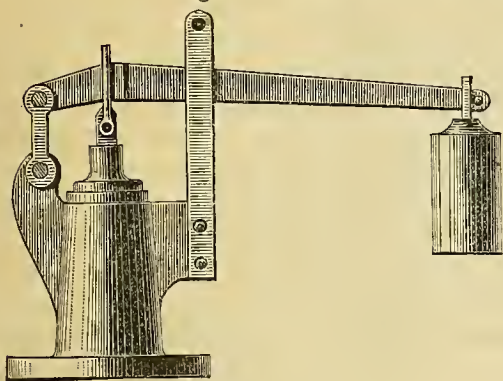


Fig. 4.

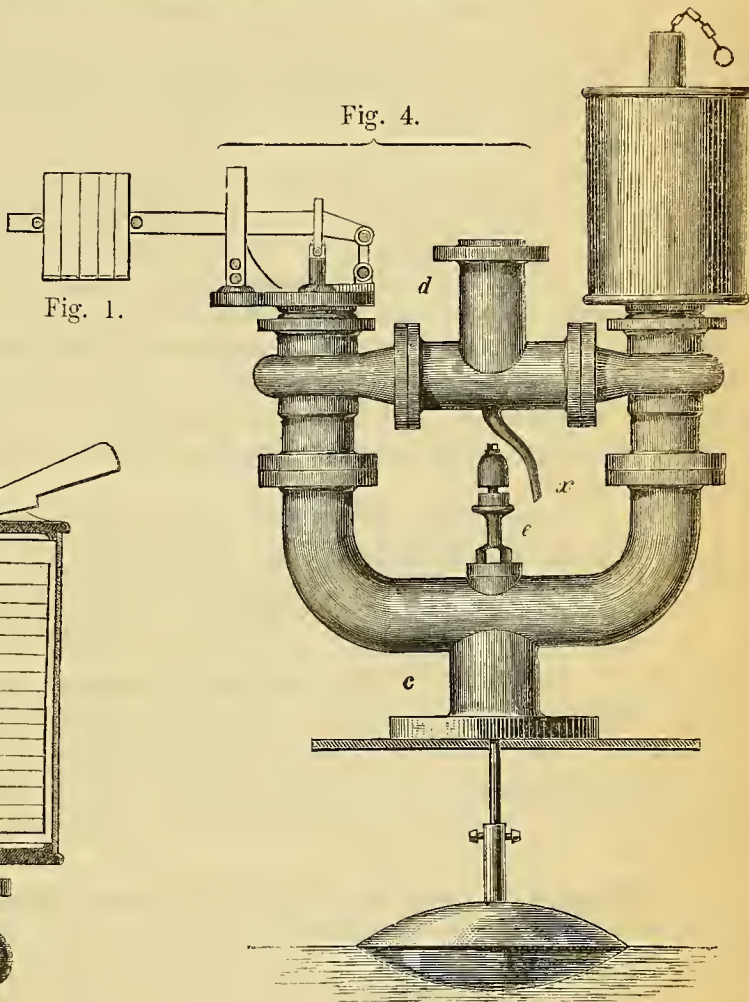


Fig. 1.

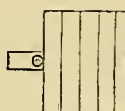


Fig. 8.

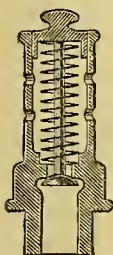


Fig. 7.

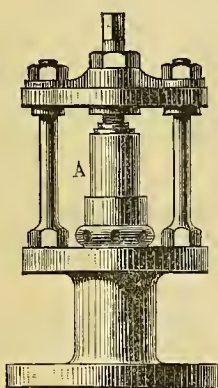


Fig. 3.

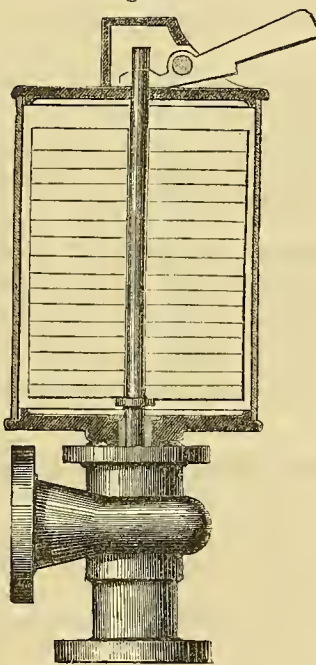


Fig. 12.



Fig. 11.



Fig. 10.



Fig. 9.



Fig. 2a.

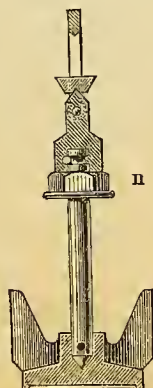
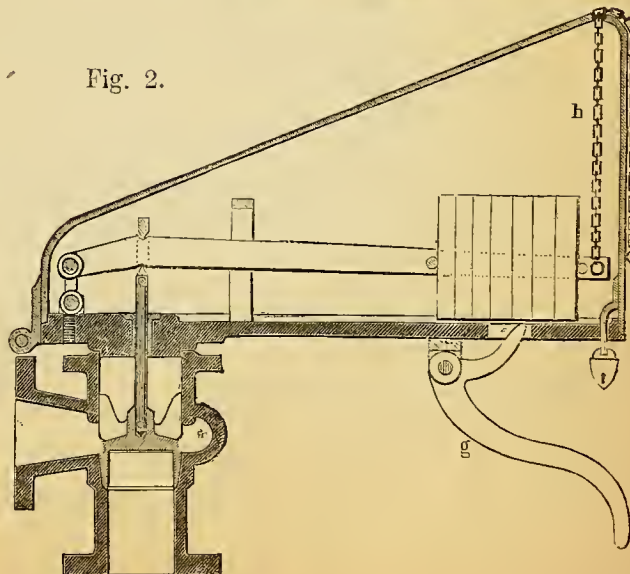


Fig. 2.



Bemerkungen zu Tafel VII., Fig. 1, 2, 2a, 3, 4, 5, 7, 8, 9, 10, 11, 12.

Bezeichnung der Sicherheits-Ventile.

Fig. 1 sub Fig. 4. **Sicherheits-Ventil mit Hebelbelastung, freistehend (ohne Verschlusskasten),** für sich allein nach Königl. Preussischem Regulativ nicht gesetzmässig.

Fig. 2. **Sicherheits-Ventil mit Hebelbelastung verschlossen, nach Königl. Preuss. Regulativ vom 31. August 1861.** Der Verschlusskasten ist aufklappbar und mit Oese zum Einhängen eines Schlosses versehen, das Schloss wird nur auf extra Bestellung mitgeliefert. Auf Verlangen wird nach erfolgter Bestellung dieser Sicherheits-Ventile, Concessionszeichnung mit Berechnung in Duplo gratis geliefert. Die Aulüfte-Vorrichtung kann sowohl in einer Kette **h** als in einem Hebel **g** bestehen, worauf bei Bestellung zu achten; wird nichts darüber mitgeteilt, so wird stets mit Kette geliefert, wofür auch der unten aufgeführte Preis ausgeworfen ist. Hebelanlüftung wird extra berechnet.

Um den **zuweilen eintretenden Klagen über Undichtwerden** der Sicherheitsventile vorzubeugen, ist die Einrichtung, wie Fig. 2a angiebt, getroffen, welche wir unter der Bezeichnung „**Drehvorrichtung nach Leyser**“ gegen extra Berechnung statt der gewöhnlichen Druckstange liefern. Steckt man nämlich bei **n** einen Schlüssel auf, so kann man den Ventilkegel durch kurzes Hin- und Herdrehen, während er unter Belastung bleibt, nachschleifen.

Fig. 3. Sicherheits-Ventil mit directer Belastung unter Verschlusskasten. Die Aulüfte-Vorrichtung wird bis zu $2\frac{1}{2}''$ \ominus wie bei Fig. 1 sub Fig. 4 mit Kette, von da ab mit Hebel wie bei Fig. 3 ausgeführt.

Fig. 4. **Combinirtes Sicherheits-Ventil;** combinirt aus den Ventilen Fig. 1 und 3, wobei es dem Besteller jedoch überlassen bleibt, auch andere Combinationen zu wählen. Diese Anordnung gewährt den Vorzug, dass für zwei Ventile nur ein Loch in dem Kessel erforderlich wird. Der Doppelarmstutzen **c**, das Verbindungsstück **d** für den ausgehenden Dampf, sowie der Alarm-Schwimmer **e** (Speiserufer Tafel VII. Fig. 6) werden besonders berechnet und kann letzterer auch nach Belieben fehlen oder angebracht werden. Das Röhren **x** dient zur Abführung des Condensationswassers. Schrauben und Muttern zum Zusammenschrauben der Doppelarmstutzen mit den Ventilen werden ebenfalls extra aber billigst berechnet.

Anmerkung. Gebohrte Flantschen und extra grosse werden extra berechnet, gekrümmte Flantschen und Verlängerungen oder Veränderungen werden im Modell untern vorgenommen und lieber durch Extra-Stutzen erzielt, welche sich meist billiger berechnen und kürzere Lieferzeiten erfordern als Modelländerungen.

Allgemeines. Die Führungssteege der Ventilkegel liegen oberhalb, wodurch dem Ausschleissen (Vergl. Tafel VI.) sicher vorgebeugt ist, keine Querschnitts-Verengung entsteht und die Berechnung des Querschnitts einfach im Aufschlagen in einer Kreistabelle besteht. Man kommt, da keine Steege in Abzug zu bringen sind, hier mit Anwendung kleinerer Ventile aus, als da, wo solches der Fall ist.

Fig. 5. **Sicherheits-Ventil mit Hebelbelastung, freistehend, nach Königl. Sächsischem Gesetz.** (Sicherheits-Ventile, den Gesetzen anderer Staaten entsprechend, werden auf Bestellung gleichfalls ausgeführt.) Die Führung der Ventilkegel ist hier unterhalb geblieben, weil das durch Construction bedingt ist.

Bei Bestellung ist ausser den bereits angedeuteten Punkten anzugeben: No. der Figur, Diameter des Ventils, oder Heizfläche des Kessels resp. Kesseldimensionen, Dampfspannung in Atmosphären und ob die Belastungsgewichte mitzuliefern sind.

Dimensionen und Preis-Verzeichniss der Sicherheits-Ventile.

Diameter der Durchgangs- öffnung	Zoll.																				Zoll.	Die Durchgänge der Ventile nach Sächs. Gesetz verstehen sich in sächs. Zollen.		
	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$	4	4 $\frac{1}{4}$	4 $\frac{1}{2}$	4 $\frac{3}{4}$	5	5 $\frac{1}{4}$	5 $\frac{1}{2}$	5 $\frac{3}{4}$			6	7
Flantschdurchmesser	26	33	39	46	53	59	65	72	78	85	91	98	104	111	118	124	131	137	144	150	157	183	Millim.	}
	4	4 $\frac{1}{4}$	4 $\frac{1}{2}$	5	6	6 $\frac{1}{2}$	7	7 $\frac{1}{2}$	8	8 $\frac{1}{2}$	8 $\frac{3}{4}$	9 $\frac{1}{4}$	9 $\frac{1}{2}$	10	10	11	11	12	12	12 $\frac{1}{2}$	12 $\frac{1}{2}$	13 $\frac{1}{2}$	Zoll.	
	104	111	118	131	157	170	183	197	209	223	223	242	242	262	262	288	288	314	314	327	327	353	Millim.	
Preise:																								
Nach Fig. 1 und 5, Hebelbelastung, freistehend...	10	12	14 $\frac{1}{2}$	16 $\frac{1}{2}$	19 $\frac{1}{2}$	21 $\frac{5}{8}$	24 $\frac{1}{2}$	27 $\frac{1}{2}$	30	33	35	37 $\frac{1}{2}$	40	42 $\frac{1}{2}$	45	47 $\frac{1}{2}$	50	52 $\frac{1}{2}$	55	57 $\frac{1}{2}$	60	70	Thlr.	
Nach Fig. 2, Hebelbelastung, verschlossen	11 $\frac{5}{8}$	14	16 $\frac{1}{2}$	20	23 $\frac{1}{2}$	26 $\frac{1}{4}$	28 $\frac{3}{4}$	31 $\frac{5}{8}$	35 $\frac{3}{8}$	39	42 $\frac{1}{2}$	45	47 $\frac{1}{2}$	50	53 $\frac{1}{4}$	56	58 $\frac{3}{4}$	61 $\frac{1}{2}$	64 $\frac{3}{4}$	67 $\frac{1}{2}$	70	82	..	
Für Anlüfte-Hebel statt Kette nach Fig. 2g, extra	1	1	1 $\frac{1}{3}$	1 $\frac{1}{3}$	1 $\frac{1}{3}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{2}{3}$	1 $\frac{2}{3}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	2	2	2	2	2	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3	..	
Für Dreh-Vorrichtung nach Leyser, sub Fig. 2a, extra	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{5}{8}$	1	1	1 $\frac{1}{3}$	1 $\frac{1}{2}$	1 $\frac{2}{3}$	1 $\frac{2}{3}$	1 $\frac{2}{3}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	2	2	2	2	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3	..	
Nach Fig. 3, direct belastet	7 $\frac{1}{2}$	10	12 $\frac{1}{2}$	15	16 $\frac{5}{8}$	18 $\frac{3}{4}$	20 $\frac{3}{8}$	22 $\frac{1}{2}$	25	27	28 $\frac{3}{4}$	31	32 $\frac{1}{2}$	35	37 $\frac{1}{2}$	40	42 $\frac{1}{2}$	45	47 $\frac{1}{2}$	50	52 $\frac{1}{2}$	62 $\frac{1}{2}$..	
Die in Fig. 4 bezeichneten Röhren c und d inclusive der Zusammensetzungsarbeiten mit dem Speiserufer	10	11	13	14	14 $\frac{1}{2}$	16	20	22	25	27	29	30 $\frac{1}{2}$	32	34	36	38	40	42	44	46	48	56	..	
Belastungsgewichte pro 100 \varnothing 4 Thlr.																								

Fig. 7. Sicherheits-Ventil mit Feder-Belastung für Locomobilen, wird in zwei Grössen ausgeführt.

Diameter des Ventils	Zoll. 1	Millim. 26	Zoll. 2	Millim. 52	Die höchste Dampfspannung ist bei Bestellung anzugeben.
Flantschdurchmesser..	4	104	6	157	
Preis	12		16		Thlr.

Fig. 8. Luft-Ventil.

Diameter des Ventils	Zoll. $\frac{1}{2}$	Millim. 13	Zoll. $\frac{3}{4}$	Millim. 20	Zoll. 1	Millim. 26
Preis	2		4		8 Thlr.	

Federwaagen

zur Belastung der Sicherheits-Ventil-Hebel bei locomobilen Dampfzeugern.

Dimensionen und Preis-Verzeichniss.

Fig.	Bezeichnung.	Grösse.	Schutzhülse				Spindel-länge		Preis.
			Diameter		Länge		Zoll.	Millim.	
			Zoll.	Millim.	Zoll.	Millim.	Zoll.	Millim.	
9	Federwaage, Scala auf der Auszugstange, für Locomobilen etc.....	Klein Modell	$1\frac{3}{8}$	36	$4\frac{5}{8}$	120	$4\frac{3}{4}$	124	7 Thlr.
10	do. für Locomotiven	Gross Modell	$1\frac{3}{4}$	46	10	262	richtet sich nach der Scalenlänge.		12 "
11	Federwaage mit Scala auf dem Aussenrohre, Salters Patent, für Locomobilen etc.....	Klein Modell	$1\frac{1}{6}$	43	$7\frac{1}{2}$	197			10 "
„	do. für Locomotiven	Gross Modell	$2\frac{1}{8}$	55	10	262	15 "		
12	Federwaagen nach Meggenhofen für Locomotiven, Scala auf dem Auszugrohre.....	Original-Grösse	$2\frac{1}{4}$	59	9	235	{ a. $5\frac{3}{4}$ | 150 } { b. 5 | 131 }		$33\frac{1}{3}$ "

Anmerkung. Wenn besondere Spindellängen gewünscht werden, so ist das besonders anzugeben. Bezüglich der Eintheilung sind bei Bestellung gleichfalls die nöthigen Angaben zu machen.



Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Fig. 6.

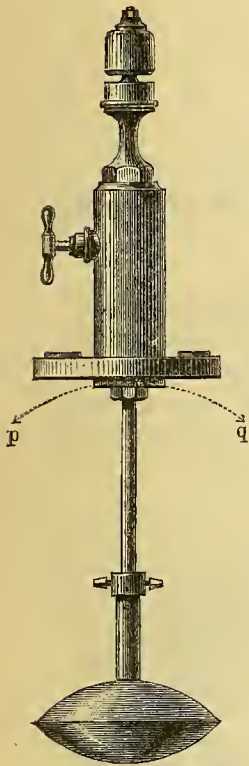


Fig. 14.

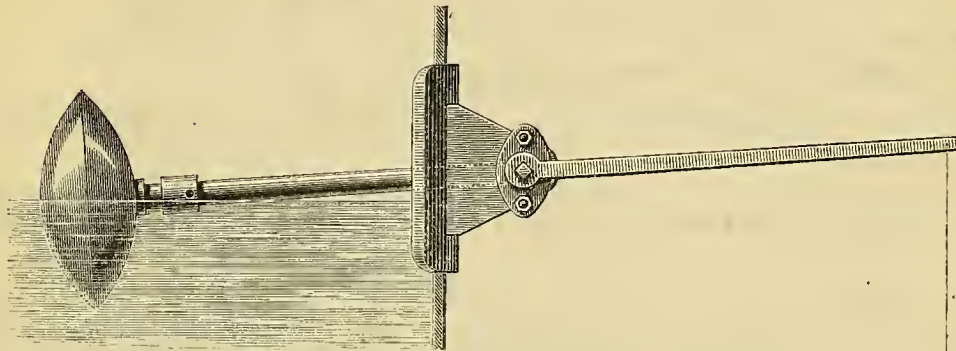


Fig. 13.

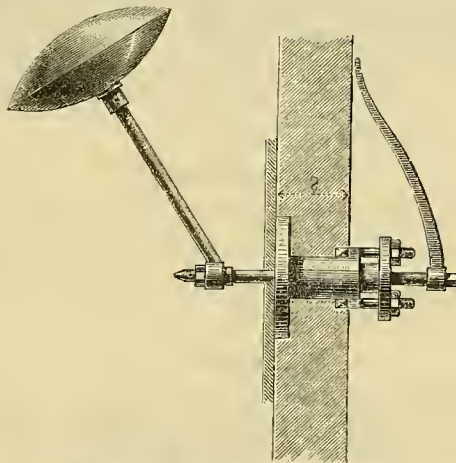
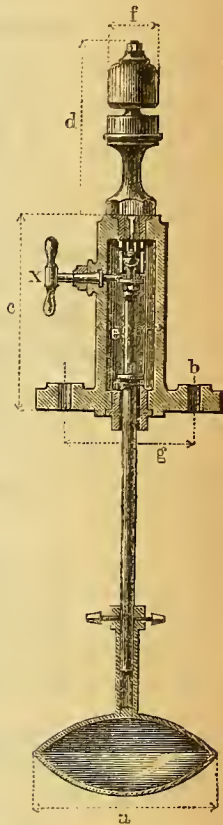


Fig. 6 A.



Sicherheits-Apparate mit Schwimmer zur Controle des Wasserstandes im Dampfkessel.

Diese Apparate indiciren einerseits den Stand des Wassers im Dampfkessel, andererseits rufen sie den Kesselwärter zur An- oder Abstellung der Speise-Vorrichtung, sobald das Wasser im Kessel unter den Normalstand sinkt, respective darüber hinaus steigt.

Die Beurtheilung des Wasserstandes im Dampfkessel vermittelt des allgemein angewandten „Wasserstands-Glases“ ist keine unbedingt zuverlässige, auch wenn dieser Apparat an sich, in seinen einzelnen Theilen, in vollkommener Ordnung erscheint. Bei einer Undichtigkeit am Flansch des oberen Hahnstückes oder (bei Vorfeuerung) an der oberen Verbindungs-Röhre tritt nämlich folgender — bislang nicht beachteter — Fall ein: Durch den an diesen Stellen entweichenden Dampf wird die Spannung im betreffenden Hahnkörper je nach der Grösse der Undichtigkeit mehr oder weniger vermindert und das Wasser steigt, dieser Druckverminderung entsprechend, im Wasserstandsglase über den Wasserstand im Kessel empor. Wir haben durch solche Undichtigkeiten vorgekommene Differenzen des Wasserstandes im Glasrohr, gegen den im Kessel vorhandenen, bis zu 8" beobachtet. Durch Anlüften (Undichtstellen) des Kükens am Dampfahn kann man sich hiervon practisch schnell überzeugen: das Wasser wird sofort im Glasrohr steigen und beim dichten Verschluss des Kükens eben so schnell wieder fallen.

Wie häufig unbeachtete Undichtigkeiten — sichtbare und nicht sichtbare — an Wasserstandszeigern, zumal (bei Vorfeuerung) an den Flanschen der eingemauerten Zuleitungsröhren, vorkommen, ist bekannt. Der Heizer, vertrauend auf seine Beobachtung des Wasserstandes im Glasrohr, bemerkt den Wassermangel im Kessel nicht. Gewiss die meisten Dampfkessel-Explosionen sind daher diesem Uebelstande zuzuschreiben, ohne dass dem Heizer der Wassermangel im Kessel zur Last gelegt werden kann.

Aus vorstehend Mitgetheiltem erhellt, dass die Anwendung einer zweiten Vorrichtung zur Controle des Wasserstandes im Dampfkessel geradezu nothwendig ist. Jeder Besitzer von Dampfkesseln sollte zu seiner eigenen Beruhigung auf Beschaffung einer solchen Vorrichtung Bedacht nehmen.

Wir empfehlen als zweckdienlichsten Sicherheits-Signal-Apparat für den zu tiefen Wasserstand im Kessel vornehmlich unsern, durch Skizze 6 und 6A in Ansicht und Durchschnitt dargestellten Patent-Speise-Rufer.

Fig. 6A, B. **Patent-Speise-Rufer.**

Den Dampf-Zugang zur Pfeife verschliesst eine Kugel, welche an dem oberen Ende der Schwimmerstange befestigt ist. Die pendelartige Bewegung des Schwimmers verhindert ein Festsetzen der Kugel und erhält einen stets dampfdichten Verschluss. Sobald jedoch das Wasser im Kessel sinkt, nimmt der Schwimmer die Kugel mit, und es erfolgt zunächst ein stossweises, bei stärkerem Fall des Wassers ein fortwährendes Pfeifen.

Auf seine nachstehend aufgeführten Vorzüge hinweisend, leisten wir für das präcise und ganz zuverlässige Functioniren dieses Apparates unbedingte Garantie.*)

Vorzüge des Patent-Speise-Rufers.

1. Er ruft den Heizer nicht erst dann, wenn der Wasserstand im Kessel schon eine gefahrdrohende Tiefe erreicht hat, sondern gerade in dem Momente, in welchem der Kessel Wasser bedarf.
2. Bei erfolgreicher Speisung schliesst er sich selbstthätig.
3. Er wird **nie durch Reibung in seiner Function gehindert.**
4. Wegen der Einfachheit seiner Construction bedarf er weder Wartung noch Reparatur.
5. Er ist dem Heizer unzugänglich.
6. Wegen der Zuverlässigkeit seiner Function gewährt er, als sichere Controle für den Wasserstand im Dampfkessel, eine **gleich sichere Controle für den Wasserstandszeiger und folgerecht auch für die Speise-Vorrichtungen.**

Der Patent-Speise-Rufer wird in zwei Modellen ausgeführt.

1. **Gross Modell** mit 13" = 340 Mm. Diam. habenden Schwimmer und Diam. der Dampfpeife $1\frac{3}{4}$ " = 46 Mm. 25 Thlr.
2. **Klein Modell** mit 8" = 209 Mm. Diam. habenden Schwimmer und Diam. der Dampfpeife $1\frac{1}{4}$ " = 34 Mm. 16 Thlr.

Die übrigen durch Buchstaben bezeichneten Maasslinien werden auf Verlangen auch mitgetheilt.

Um den Apparat auch für Ruudungen passend zu machen, ist ein kleiner Ansatz daran, welcher, wie Zeichnung durch Pfeil p q andeutet, ausgerundet werden kann; bei aussergewöhnlichen Kessel-Verhältnissen sind bezüglich Länge der Schwimmerstange die Hauptmassen des Kessels anzugeben.

Montirung.

Man überträgt zunächst das Maas von der Oberkante des Kessels bis zur Linie des Normal-Wasserstandes auf die Entfernung von der Unterkante des Flantsches des Apparates bis zur Eintauchungs-Linie des Schwimmers, macht diese Entfernung durch bezügliches Anschrauben des Schwimmers auf die Schwimmerstange dem erhaltenen Abrisse entsprechend, und bezeichnet den Punkt wo der Schwimmer stehen muss durch eine „Marke“. Alsdann bringt man den Apparat auf den Kessel, den Schwimmer durch's Mannloch in den Kessel hinein und schraubt letztern dann bis zur „Marke“ auf die in den Kessel hineinreichende Schwimmerstange und fixirt ihn hier sicher durch die betreffenden Schrauben, wozu die Schwimmerstange an der Stelle wo die Stellschrauben sich befinden etwas eingefeilt werden muss, um eine sichere Befestigung zu erzielen.

Atteste.

Die Herren **Schäffer & Budenberg** in Buckau-Magdeburg lieferten mir im Mai 1860 einen sogenannten Patent-Speise-Rufer mit Schwimmer, die Pfeife ohne Hahn, welchen ich auf meinem 3 Atmosphären Ueberdruck haltenden Dampfkessel so anbrachte, dass er functionirt, sobald das Wasser auf den Normalstand herabgesunken ist. Ich lasse letzteres von Zeit zu Zeit absichtlich geschehen und hat bei diesen Proben der Apparat bis jetzt noch nie versagt.

Eine Hauptursache von Kessel-Explosionen: „Wassermangel“, ist hierdurch sonach gründlich verhütet, weshalb ich es für Pflicht eines jeden Kesselbesitzers halte, solchen Apparat zu beschaffen.

Neustadt-Magdeburg, den 11. Februar 1865.

(L. S.)

pp. **J. Aders.**
A. Maseberg.

Seit drei Jahren habe ich patentirte Speiserufer (Controle über den Wasserstand im Dampfkessel) von Herren **Schäffer & Budenberg** in Buckau-Magdeburg in Anwendung. Die Apparate sind keiner Reparatur unterworfen gewesen und haben stets, wenn das Wasser eine bestimmte Tiefe erreichte, pünktlich und durchaus zuverlässig gerufen. Aus voller Ueberzeugung empfehle ich diese einfache Sicherheits-Vorrichtung gegen Wassermangel im Dampfkessel jedem Besitzer eines Dampferzeugers.

Hettstädt, den 26. April 1865.

(L. S.)

G. Grund,
Maschinenmeister des Mansfelder Bergbau- und Kupferhütten-Vereins.

Anmerkung. Die gewöhnlichen Schwimmer mit Rad und Zeiger, Hebel und Contregewicht, wobei sich vertical verschiebende Dräthe durch Stopfbüchsen geführt werden, führen wir ihrer geringen Zuverlässigkeit wegen nicht.

Dagegen führen wir von dergleichen Schwimmereinrichtungen die Drehschwimmer, weil hierbei weniger Bedenken für Zuverlässigkeit vorhanden sind und weil es Fälle geben kann, wo deren Anwendung unvermeidlich erscheint.

Fig. 13. **Drehschwimmer für Dampfkessel und Vorwärmer**, direct an der Stirnwand zu befestigen. — Ist noch die Stirnwand schützendes Mauerwerk vorhanden, so muss die mit Fragezeichen versehene Länge angegeben werden, weil die Stopfbüchse jedenfalls frei und zugänglich bleiben muss. Preis 16 Thlr.

Fig. 14. **Drehschwimmer für Vertical-Kessel**, mit 20" langen Hebelarmen und für eine Niveaudifferenz von 30" ausreichend. Preis 20 Thlr.

Der Schwimmer ist hohl aber schwer genug; das etwaige Ausbalanciren erfolgt durch die bei x angehängte indicirende Marke.

Bei Bestellung ist der Krümmungsradius des Verticalkessels anzugeben — wird nichts darüber angegeben, so liefern wir nach Normal-Modell für 30" Radius.

*) Bei x ist eine Probir-Vorrichtung, welche gestattet, jederzeit den Schwimmer hinabzudrücken und sich so von der richtigen Function zu überzeugen. Ausserdem hat man es auf diese Weise in der Hand, den Speiserufer als Signalpfeife verwenden zu können.

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN, Lower Kingstr. 23. Hopest. 202. Elisabethstr. 655-1. Opernring 10.

Klasse der saugenden Injecteurs.

Injecteurs,

Patent Giffard. — Patent Schäffer & Budenberg.

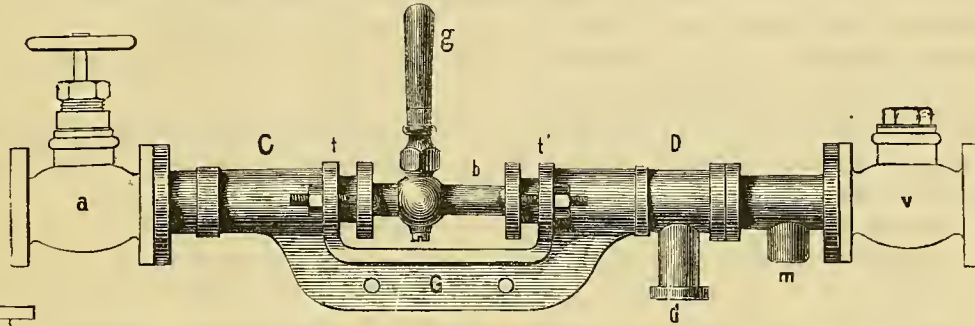


Fig. 2. Schäffer'sche Construction.

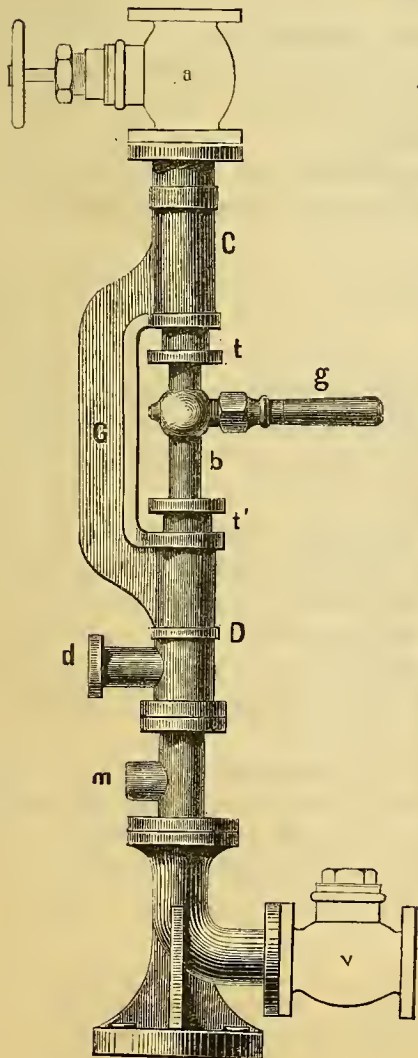


Fig. 3. Schäffer'sche Construction, stehend.

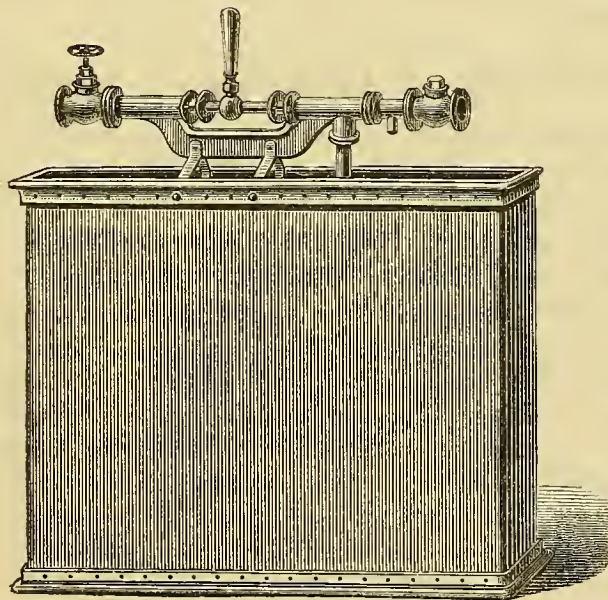


Fig. 1. Injecteur Schäffer, liegend auf schmiedeeisernem Speisebassin montirt.

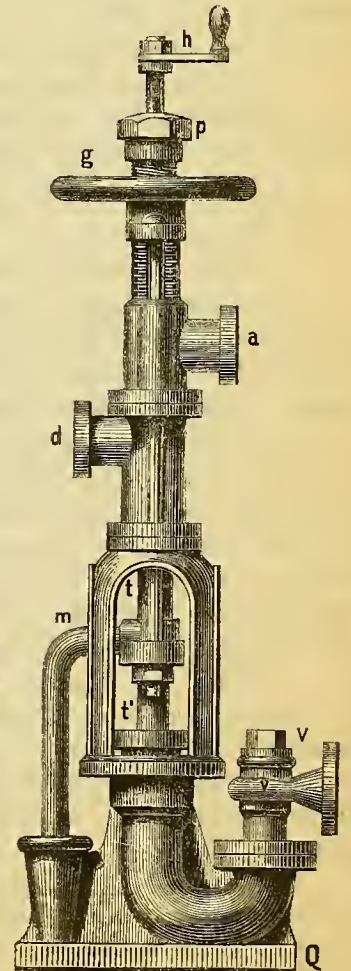


Fig. 4. Construction Delpêche.

Injecteur Giffard, Dampfstrahlpumpe, **selbstthätige Speise-Vorrichtung für Dampfkessel.**

Klasse der saugenden Injecteurs.

Injecteure sind Apparate, welche sich in ihrer Anwendung als Speise-Vorrichtung bei allen Arten von Dampfkesseln, für stationaire, locomobile und Schiffskessel viel vortheilhafter und auch im Preise billiger erweisen, als alle bekantnen sonst üblichen Speise-Vorrichtungen.

Es bestehen dieselben in einem System von Düsen, durch welche ein dem zu speisenden Kessel entnommener Dampfstrahl geschickt wird. Dieser erzeugt in einem dem Injecteur angehörenden Raume eine Luft-Verdünnung, wodurch Wasser angesogen wird. Diesem Wasser theilt der Dampf seine Geschwindigkeit mit und vermöge der lebendigen Kraft wird soleher fortgeschleudert und gelangt mit Ueberdruck in den Kessel.

Laut preussischem Regulativ vom 29. December 1863, welches zwei Speise-Vorrichtungen vorschreibt, sind Injecteure als Speise-Vorrichtungen polizeilich concessionirt.

Die Wirkung der saugenden Injecteurs ist für jede Dampfspannung über 10 Pfd. pro □“ hinaus herzustellen und schaffen dieselben pro Pferdekraft und pro Minute, bei 4 Atmosphären Ueberdruck, 1 Pfd. Speisewasser in den Kessel; hiernach ist bei Bestellung anzugeben:

- 1) die Leistung in Pferdekraft oder in Zoll-Pfund pro Minute;**
- 2) unter wie hohem Dampfdruck diese Leistung stattfinden soll.**

Von Wärme-Verlust ist beim Injecteur nicht die Rede, da sämmtlicher Dampf, der zum Fördern des Wassers benutzt wird, von diesem condensirt, als heisses Wasser dem Kessel wieder zugeführt wird.

Vorwärmer-Vorrichtungen macht der Injecteur ganz entbehrlich. Er saugt Wasser von jeder Temperatur bis zu circa + 40° Réaum.; Speise-Wasser von circa + 6° R. schafft er bis nahe zu + 60° R. erwärmt in den Kessel, angewärmtes Speise-Wasser von circa + 35° R. bis nahe zu + 73° R.

Je höher die Dampfspannung ist, um so geringer muss die Wärme des Speise-Wassers sein. Bei 1 bis 2 Atm. kann der Injecteur daher auch beträchtlich wärmeres Wasser als 40° saugen — es ist dies jedoch nicht zu empfehlen — und mehr als Experiment zu betrachten.

Zur Notiz bei Aufstellung des Injecteurs.

1) Der Injecteur ist möglichst in der Nähe des Kessels zu placiren.

2) Die Dimensionen der Rohrleitungen, vom Kessel zum Injecteur und umgekehrt, sind entsprechend den Bohrungen der betreffenden Flautschen jedes einzelnen Apparates zu wählen, eher weiter als enger. Die Speiseröhre führe man möglichst direct zum Kessel, die Dampfzuleitungsröhre ebenso zum Injecteur und zwar letztere von dem höchsten Punkte des Kessels aus.

3) Der Injecteur saugt das Speisewasser 3 bis 4 Fuss hoch, grössere Apparate auch wohl 5 bis 6 Fuss. Immerhin aber wähle man die Saughöhe möglichst niedrig. Ein leichtes (Leder-) Ventil, an das Ende des Saugrohrs angebracht, oder ein Winkelrohr mit Absperrbahn und Trichter zum Wassereinfüllen in's Saugrohr beim Anlassen des Injecteurs, erleichtert demselben das Ansaugen des Speisewassers wesentlich. Ein Sieb an der Mündung der Saugeröhre verhütet, dass Unreinlichkeiten des Wassers in den Apparat kommen, vergl. Tafel VIIA. Fig. 22. Die horizontale Länge der Saugeröhre ist gleichgültig, doch bedingt die grössere Länge auch eine verhältnissmässig grössere Weite derselben.

Braucht der Injecteur das Speisewasser nicht anzusaugen, sondern strömt es ihm von oben zu, so ist seine Krafterleistung vergrössert. Je geringer die Dampfspannung, unter welcher der Injecteur arbeiten muss, desto niedriger ist die Höhe, auf welche er das Speisewasser ansaugt. Zu erwähnen ist nochmals, dass für den guten Gang des Injecteurs, Reinheit der Rohre und hinreichende Weite derselben, und nicht zu unreines Wasser, leichtes Spiel des Speiseventils, dichter Anschluss des Saugrohrs und Einhaltung mässiger Speise-Wasserwärme bei möglichst geringer Saughöhe nothwendig sind.

Anmerk. Es giebt eine sehr grosse Anzahl diverser Injecteur-Constructions, und haben wir, wie unsere früheren Preiconrants zeigten, jahrelang, um den Ansichten darüber Rechnung zu tragen, eine grosse Anzahl davon, französischer und englischer Construction geführt. Es sind gegenwärtig aber die meisten dieser Constructions durch weit einfachere und leichter zu handhabende Constructions verdrängt, so dass wir jetzt nur zwei saugende Injecteurs, die umstehend detaillirten Constructions, **Schäffer & Delpêche** führen, von denen namentlich die erstere sich bei dem Publikum als sehr zweckentsprechend beliebt gemacht hat.

Fig. 1, Fig. 2 u. Fig. 3. **Injecteur, Patent Schäffer & Budenberg.**

Construction Schäffer.

Sub Fig. 1 auf Speise-Bassin montirt, Fig. 2 liegend und sub Fig. 3 stehend dargestellt.

Beschreibung, Function, Handtirung.

Es zeichnet sich diese Construction vor den bisher üblichen Constructions dadurch aus, dass der Spindel im Innern eine feste unveränderliche Lage gegeben ist und nur die mit der Dampföffnung versehene Dampfrohre **b** bewegt wird. Die doppelte Handhabung ist hier also auf eine einfache zurückgeführt. Das Gehäuse des Injecteurs ist in zwei Theile zerlegt, von denen der eine **C** mit der Dampfleitung bei **a** in Verbindung gebracht wird, (resp. mit einem Dampf-Absperr-Ventil oder Hahn,) während der andere **D** den Saugerohrstutzen **d** und den Abfallrohrstutzen **m** trägt und bei **v** mit einem Speise-Ventil zur Verbindung mit dem Kessel versehen werden kann. - Beide Theile sind durch einen Bügel **G** verbunden. Durch diese Trennung des Injecteurs ist die innere Dichtung fortgefallen und in eine Stopfbüchsendichtung verwandelt worden, welche von Aussen leicht zugänglich ist. Die Dampfrohre **b** ist bei **t** und **t'** durch diese Stopfbüchsen geführt und dort abgedichtet. (Es empfiehlt sich, die Stopfbüchsen stets recht straff anzuziehen.) Durch die Trennung in die Theile **C** und **D** ist aber auch die Dampfkammer von der Wasserkammer gesondert und letztere vor zu hoher Erwärmung geschützt, was vortheilhaft auf das Saugen wirkt, und diese Injecteure saugen in der That vortrefflich! Das allgemeine Princip des Injecteurs ist natürlich dasselbe geblieben, daran lässt sich nichts ändern. Die Handhabung, Ingangsetzung und Regulirung des so construirten Apparats ist aber höchst einfach geworden, denn man hat nur nach Oeffnung des Dampf-Ventils den Handhebel **g** rechtwinklig gegen die Längsaxe desselben in halber oder dreiviertel Drehung langsam zu bewegen, bis kein Wasser mehr aus dem Unterlaufstutzen abläuft, um die nöthige Verschiebung der Dampfrohre **b** mit der Dampföffnung zu Wege zu bringen, weil auf dem hintern Ende der Dampfrohre ein entsprechend steigendes Gewinde aufgeschnitten ist.

Zu empfehlen ist, kurze Zeit nach Beginn der Bewegung des Handhebel **g**,*) in dem Moment wo das Saugen beginnt, und sich durch einen eigenthümlichen schlagenden Ton bemerkbar macht, eine Pause eintreten zu lassen. Dieser Injecteur kann also ohne Mühe und ohne jeden Kunstgriff auch von jedem nicht Sachverständigen (Arbeitsleuten z. B.) bedient werden.

*) Anmerk. Das Sechskant des Schlüssels **g** (Handhebels) muss stets ganz fest auf den in der Mitte aufgeschnittenen Gewindepapfen gezogen werden, weil durch das feste Zusammenziehen dieses Gewindestückes die verstellbare Röhre mittelst des Schlüssels gedreht werden soll. — Die kleine Schraube unterhalb soll nur die Stelle des Gewindestückes fixiren, aber nicht den nöthigen Widerstand für die Drehung hergeben.

Dimensionen und Preisverzeichniss.

Ausführung in bestem Metall, Düsen von bestem Rothguss.

\mathcal{N}°	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	
Leistung in Pfund Wasser	5	15	25	50	75	120	200	300	per Min. <small>bei 4 Atm. Ueberdruck.</small>
Diameter der kleinsten Düse ca.....	2	3	4	5	6	7	8	9	Millimeter.
Diameter des Flantschanschlusses	3 $\frac{1}{4}$	3 $\frac{1}{4}$	3 $\frac{1}{2}$	4	4 $\frac{1}{4}$	4 $\frac{1}{2}$	5	6	Zoll rhld.
do. do.	85	85	91	104	111	118	131	157	Millimeter.
Diameter der Rohrweiten für Dampf und Wasser...	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	Zoll rhld.
do. do. do.	13	13	20	26	33	39	46	52	Millimeter.
Fig. 2 u. 3. Preis des Injecteurs	26 $\frac{1}{3}$	33 $\frac{1}{3}$	43	53	74	96	116	162	Thaler.
„ pro Speise- oder Dampfventil incl. der Mutterschrauben zur Verbindung des Injecteurs in Metall	4 $\frac{1}{2}$	4 $\frac{1}{2}$	6 $\frac{1}{2}$	8 $\frac{1}{3}$	9 $\frac{1}{3}$	13 $\frac{1}{3}$	17 $\frac{1}{6}$	21	„
„ pro Speise- oder Dampfventil incl. der Mutterschrauben zur Verbindung des Injecteurs in Eisen	3 $\frac{1}{2}$	3 $\frac{1}{2}$	4	5	6	7 $\frac{1}{2}$	8 $\frac{5}{6}$	10 $\frac{1}{4}$	„
Für Untersätze zu stehenden Injecteurs wird extra berechnet	3 $\frac{1}{3}$	3 $\frac{1}{3}$	4	4 $\frac{2}{3}$	5 $\frac{1}{3}$	6	6 $\frac{2}{3}$	7 $\frac{1}{3}$	„

Sollen noch höhere Leistungen als 300 Pfund pro Min. erzielt werden, so ist das besonders zu vereinbaren.

Montage.

Ogleich die Montage beliebig stehend oder liegend in der Nähe des Kessels erfolgen kann, wobei vorzüglich darauf zu achten ist, dass man mit dem Handhebel **g** Platz genug für die freie Drehung behält, so empfiehlt es sich jedoch sehr, liegende Injecteurs, wie sub:

Fig. 1 direct auf einem schmiedeeisernen Speisebassin montirt, complett armirt anzuwenden, und liefern wir dergl. fertige montirte Injecteurs incl. Speisebassin billigst und bereitwilligst. Für schmiedeeiserne Speisebassins wird der Ctr. mit Thlr. 11 berechnet.

Fig. 4. **Injecteur nach Delpêche,**

wird stehend und liegend angefertigt und eignet sich besonders für Locomotiven, kann indessen auch anstandslos bei stationären Kesseln Verwendung finden.

Die Handhabung ist eine doppelte, mittelst Stellrad g und Kurbel h, jedoch ist die innere Dichtung vermieden und in eine Stopfbüchsendichtung verwandelt worden.

Bei Ingangsetzung ist zuerst vorsichtig Dampf zu geben, also langsam die Kurbel h zurückzudrehen, bis der Injecteur fasst, dann dreht man h schnell zurück, giebt voll Dampf und regulirt endlich mit Stellrad g so lange, bis das Ueberlaufen aufhört.

Dieser Injecteur wird in folgenden Grössen ausgeführt:

	No.	VI.	VII.		
Leistung in Pfund Wasser.....		120	200	per Minute.	Das Modell No. VII, obgleich es dieselben Rohrweiten verlangt als No. VI, ist im Caliber und in den äusseren Dimensionen bedeutend kräftiger und grösser.
Diameter der kleinsten Düse ca.....		7	8	Millimeter.	
Diameter der Flantschen		4½	4½	Zoll rhld.	
„ „		118	118	Millimeter.	
Diameter der Rohre für Dampf und Wasser....		1¾	1½	Zoll rhld.	
do. do.		36	39	Millimeter.	
Fig. 4. Preis des Injecteurs		128	128	Thaler.	
„ des Speise-Ventils in Eisen		6⅔	6⅔	„	

Anmerk. Bei Bestellung der Injecteurs bitten wir ausser dem bereits Erwähnten anzugeben, ob der Injecteur complett zu liefern ist.

NB. Unter „Injecteur complett armirt“ verstehen wir den Injecteur mit Dampf- und Speise-Ventil.

Alle unsere Injecteurs werden auch praktisch geprüft.

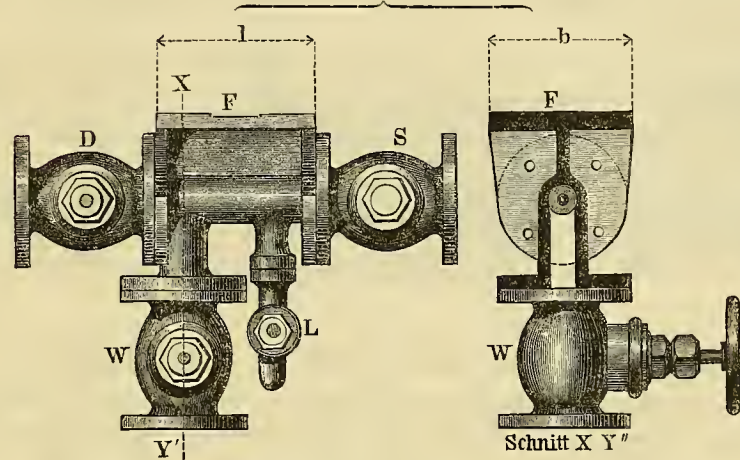


Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in **Buckau-Magdeburg.**

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23. Hoestr. 202. Elisabethstr. 655-1. Opernring 10.

Klasse der nicht saugenden Injecteurs.

Fig. 5.



Patent Injecteur,
System Schau für stationaire Kessel.)*

Derselbe gehört, wie schon oben die Classificirung andeutet, zu den Injecteurs, welche nicht saugen, und daher der Wasserzuführung bedürfen. Die Construction desselben, ein festes unveränderliches System vom Düsen, erinnert an den rühmlichst bekannten Injecteur Krauss**) und verbindet alle Vorzüge und Vortheile desselben mit den weiter unten angeführten. Seine Anwendung ist überall da am Platze, wo ihm das Wasser zugeführt werden kann, was durch Anbringung von Reservoirs leicht erzielbar ist. In Städten mit Wasserleitung kann die Wasserkunst beuquem zur Füllung von Speise-Bassins benutzt werden. Directe Zuführung des Wassers von städtischer Wasserleitung ist nur dann möglich, wenn der zum Betrieb des Injecteurs dienende Dampfdruck eine bedeutend höhere Spannung besitzt als der Druck in der Wasserleitung, anderen Falls versagt der Injector.

Die Vorzüge dieses Injecteurs gegen andere Constructionen sind folgende:

- 1) Zweite Wasseraufnahme unter Verhinderung der Mitnahme athmosphärischer Luft.
- 2) Geringere Grösse bei gleicher Leistung.
- 3) Geringerer Dampfverbrauch.
- 4) Arbeitsvermögen von 5 tt bis 10 Atmosphären, (für stationaire Kessel wird man indess selten über 6 Atmosphären gebrauchen).
- 5) Geringerer Preis.

Fig. 5 stellt den Injecteur in Grundriss und Schnitt X Y' dar. D ist das Dampf-Ventil, W das Wasserzuführungs-Ventil, (die Stellräder sind bei beiden Ventilen im Grundriss fortgedacht), S das Speise-Ventil, L das Luft-Ventil. Die Ventile D S W werden nur dann mitgeliefert, wenn sie mit bestellt werden, oder wenn der Injector als „complett armirt“ bezeichnet wird. Das Luft- oder Ueberlauf-Ventil L gehört stets zum Injector und wird immer mitgeliefert.

*) Durch speciellen Vertrag mit Herrn Director C. Schau in Wiener Neustadt ist uns die Alleinberechtigung zur Ausführung dieser Injecteurs, Patente etc. übergeben.

**) Injecteur Krauss hat bekanntlich keinerlei Stopfbüchsen, keine beweglichen Theile und keinerlei Dichtung im Innern.

Ingangsetzung. Man öffnet erst ganz das Wasserregulir-Ventil, darauf ganz langsam das Dampf-Ventil und regulirt schliesslich mit dem Wasserregulir-Ventil so lange, bis kein Wasser mehr aus dem Luft-Ventil abläuft. Dampf- und Wasserhahn sind in ihrer Stellung nur bei grossen Differenzen im Dampfdruck zu ändern. Bei Abstellung des Injectors sind Wasser- und Dampf-Ventil möglichst gleichzeitig zu schliessen!

Bezüglich der Wasserwärme für das Speise-Wasser ist zu bemerken, dass dieselbe möglichst niedrig zu halten ist. Bei 4 Atm. darf sie im Maximum noch nahe zu 38 ° R. sein, bei 6 — 7 Atm. sind noch 30 ° R. zulässig, bei 9 — 10 Atm. kaum mehr 27 ° R.

Montirung. Der Injecteur wird in der Nähe des Kessels placirt, mit der Sohlplatte seitlich gegen das Kesselmauerwerk oder sonst eine Wandung (resp. an ein Reservoir) geschraubt. Das Wasser wird ihm aus einem höher gelegenen Reservoir zugeführt, doch muss die Wasserdruckhöhe stets beträchtlich geringer sein, als der zur Anwendung kommende Dampfdruck; dies ist, wie Eingangs schon erwähnt, besonders in den Fällen zu beachten, wo man direct die städtische Wasserleitung benutzen will.

Wenn statt der liegenden Ventile **D** und **W** Eckventile gewünscht werden, was sich des Rohranschlusses wegen oft bequemer macht, so muss das bei Bestellung besonders bemerkt sein. In der Preiscourant-Tabelle sind zugleich diejenigen Dimensionen der Injecteure angegeben, deren Kenntniss wünschenswerth erscheint.

Dimensionen und Preis-Verzeichniss.

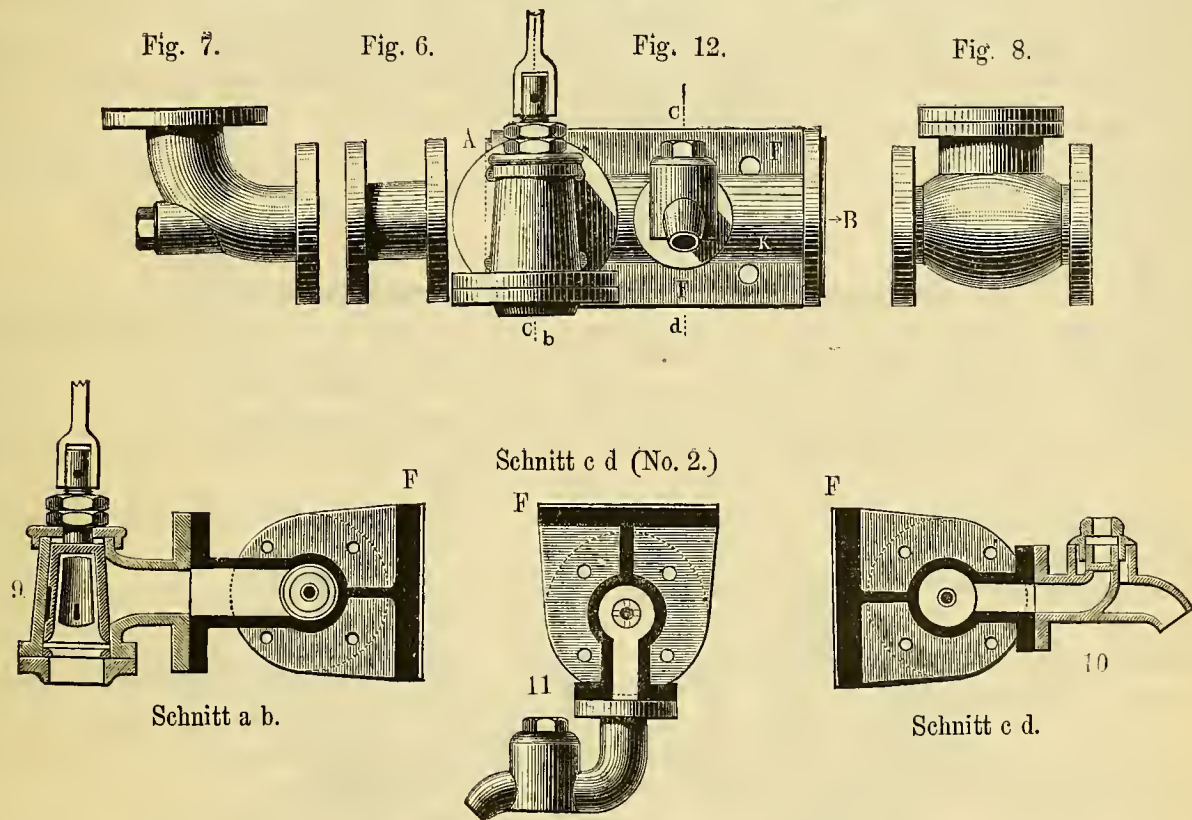
Ausführung des Injecteurkörpers in Gusseseisen. Düsen von bestem Rothguss.

N.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	Bezügl. VII. und VIII. vergleiche Tafel VII A. Fig. 12. bei 4 Atm. Ueberdr.	
Leistung in Pfund Wasser.....	5	15	25	50	75	120	200	300		
Diameter der kleinsten Düse ca.....	2	3	4	5	6	7	8	9	Millimeter.	
Fig. 5.	Injecteur-Preis.....	16	16	28	28	40	40	52	52	Thlr.
	Dampf-Ventil-Preis	3	3	4 $\frac{1}{6}$	4 $\frac{1}{6}$	6 $\frac{2}{3}$	6 $\frac{2}{3}$	8	8	"
	Wasserregulir-Ventil-Preis..	3	3	4 $\frac{1}{6}$	4 $\frac{1}{6}$	6 $\frac{2}{3}$	6 $\frac{2}{3}$	8	8	"
	Speise-Ventil-Preis	3	3	4 $\frac{1}{6}$	4 $\frac{1}{6}$	6 $\frac{2}{3}$	6 $\frac{2}{3}$	8	8	"
Flansch-Diameter.....	}	3 $\frac{1}{4}$	3 $\frac{1}{4}$	4	4	4 $\frac{1}{2}$	4 $\frac{1}{2}$	5	5	Zoll rhld.
		85	85	104	104	118	118	131	131	Millimeter.
Rohrweiten für Dampf u. Wasser	}	$\frac{1}{2}$	$\frac{1}{2}$	1	1	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	1 $\frac{3}{4}$	Zoll rhld.
		13	13	26	26	39	39	46	46	Millimeter.
Dimensionen d. Sohlplatte F	}	3 $\frac{7}{8}$	3 $\frac{7}{8}$	4 $\frac{7}{8}$	4 $\frac{7}{8}$	7 $\frac{3}{4}$	7 $\frac{3}{4}$	10	10	Zoll rhld.
		101	101	127	127	203	203	262	262	Millimeter.
	}	3 $\frac{1}{2}$	3 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	5	5	5 $\frac{1}{2}$	5 $\frac{1}{2}$	Zoll rhld.
		91	91	118	118	131	131	144	144	Millimeter.

Alle unsere Injecteurs werden vor Versand practisch geprüft! **Bei Bestellung** bitten wir ausser der Injecteur-Nummer die Leistung anzugeben, und ob der Injector complett armirt zu liefern ist!

Sollen höhere Leistungen als 300 Pfund pro Min. erzielt werden, so liefern dergleichen Apparate auch, doch ist dann über Verhältnisse, unter denen dieselben zur Anwendung kommen sollen, und Preis noch Vereinbarung zu treffen!

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 656-1. Opernring 10.**Klasse der nicht saugenden Injecteurs.****Patent-Injecteur, System Schau für Locomotiven, *)**

derselbe gehört, wie schon die Classificirung oben andeutet, zu den Injecteurs, welche nicht saugen und daher der Wasserzuführung bedürfen. Die Construction desselben, ein festes unveränderliches System von Düsen, erinnert an den rühmlichst bekannten Injecteur Krauss**) und verbindet alle Vortheile und Vorzüge desselben mit den weiter unten aufgeführten. Seine Anwendung ist überall am Platze, wo ihm das Wasser von oben zugeführt werden kann, was bei **Locomotiven mit grösster Bequemlichkeit** zu erzielen ist.

Die Vorzüge dieses Injecteurs gegen andere Constructions sind folgende:

- 1) Zweite Wasseraufnahme unter Verhinderung der Mitnahme atmosphärischer Luft.
- 2) Geringerer Grösse bei gleicher Leistung.
- 3) Geringerer Dampfverbrauch.
- 4) Arbeits-Vermögen von 10 Ø bis 10 Atmosphären und darüber.
- 5) Geringerer Preis.

Obige Zeichnung, Fig. 12, stellt den Injecteur in Ansicht mit Wasserregulirhahn und Luft- resp. Ueberlauf-Ventil dar und würde zur Erklärung sämmtlicher Theile und Schnitte Folgendes dienen: Fig. 12 **K Haupt-Injecteurkörper**, Fig. 6 u. 7 **Stutzen für bestimmte Montagen** (Fig. 7 mit Reinigungsschraube); Fig. 8 **Speise-Ventil**; Fig. 9 **Wasserregulirhahn**, aus Schnitt **a b** im Durchschnitt erkennbar — der Hahn ist so eingerichtet, dass, wenn er den Wasserzfluss nach Aussen abgeschnitten hat, das Wasser aus dem Injecteurkörper dennoch ablaufen kann, wodurch einem etwaigen Einfrieren und Springen des Injecteurkörpers vorgebeugt wird; Fig. 10 **Luft-Ventil für Montage seitlich**, Schnitt **c d**, und Fig. 11 **Luft-Ventil für Montage abwärts**, Schnitt **e d** No. 2. Am Hauptkörper, Fig. 12 **K**, befindet sich eine Platte **FF** zur Befestigung. **A** ist der Dampfeingang, **C** der Wassereingang und **B** der Speiseausgang. Statt des Wasserregulirhahnes, Fig. 9, kann unter Umständen auch der Tenderhahn Verwendung finden. Rechts- und Links-Modell ist dasselbe und wird nur das Luft- resp. Ueberlauf-Ventil um 180° versetzt.

Montirung. Es ist nur dabei zu beachten, dass der Injecteur etwa 6—18" tiefer als der tiefste Wasserstand im Tender liege. Die Anbringung der Injecteurs erfolgt meist seitlich an der Wange des Locomotivrahmens und kann dazu der in unserer Zeichnung, Fig. 12 und in den Schnitten **a b** und **c d**, gegebene Injecteur unverändert angewendet werden. Will man den Injecteur mit der Platte **FF** unter Tritt-

*) Durch speciellen Vertrag mit Herrn Director C. Schau in Wiener-Neustadt ist uns die Alleinberechtigung zur Ausführung dieser Injecteurs übergeben.

**) Injecteur Krauss hat bekanntlich keinerlei Stopfbüchsen, keine beweglichen Theile und keinerlei Dichtung im Innern.

brett schrauben, so würde diese Lage durch Schnitt *c d* No. 2 repräsentirt werden. Es ist dann ein gebogenes Luft- resp. Ueberlauf-Ventil, Fig. 11, erforderlich. Soll der Tenderhahn nicht verwendet werden, so kann man auch den Wasserregulirhahn 9 unverändert in dieser Lage beibehalten, doch müsste derselbe, da er dann horizontal zu liegen kommt, mittelst Hebel bewegt werden. Uebrigens stehen auf besondere Anfragen den Bahndirectionen gern mit unseren speciellen Erfahrungen, Rathschlägen, Abbildungen und Skizzen zur Hand, wobei zugleich noch eines Umstandes erwähnen, der volle Beachtung verdient. Es ist uns gelungen unsere Construction so wenig empfindlich herzustellen, dass man vom Ueberlauf- resp. Luft-Ventil das Wasser, welches bei Ingangsetzung sonst ins Freie laufen und nutzlos verloren gehen würde, **wieder bei hohem Druck nach dem Tender zurückführen kann**. Specielle Anordnung dafür kann man allgemein nicht geben, doch sind bei Bestellung auf directe Anfragen gern zu näheren Mittheilungen bereit. Endlich ist noch zu erwähnen, dass, wenn man das Luft-Ventil mit Druckstange versieht und niederhält, eine Vorwärmung des Tenderwassers auf diese Weise zu erzielen ist. Für gewöhnlich muss das Luft-Ventil aber frei spielen können.

Ingangsetzung. Man öffnet erst ganz den Tender- resp. Wasserregulirungshahn; darauf ganz langsam den Dampf- und regulirt schliesslich mit dem Tender- resp. Wasserhahn so lange, bis kein Wasser mehr aus dem Luft-Ventil abläuft. Dampf- und Wasserhahn sind in ihrer Stellung nur bei grossen Differenzen im Dampfdruck zu ändern. Das Speise- (Tender-) Wasser darf für gewöhnlich bis 30° R. warm sein, obgleich noch 35° R. warmes Wasser bei einer durchschnittlichen Dampfspannung von 6—7 Atm. verspeist werden kann! Für stationäre Kessel möchten wir empfehlen, die Speise-Wasser-Temperatur nur mässig hoch zu halten.

Wenn die Locomotive lange gestanden hat und das Dampfrohr etwa voll Condensationswasser steht, so ist es gut, vor Oeffnen des Wasserhahnes das Dampf-Ventil zu öffnen, damit das Condensationswasser ausspritzt, dann aber wieder zu schliessen, und wie oben angegeben zu operiren.

Beim Abstellen verfährt man in derselben Reihenfolge als beim Anstellen, schliessend.

Dimensionen und Preis-Verzeichniss.

Wir liefern für den Locomotiv-Bedarf den Patent-Injecteur, System **Schau**, nur nach einem (dem in Zeichnung gegebenen) Modell, ändern seine Leistung aber je nach Bestellung von 150—300 \varnothing Wasser per Minute.

Zu Modelländerungen behufs Anbringung sind wir bei grösseren Aufträgen gern bereit.

Ausführung des Körpers in Gusseisen. Düsen vom besten Rothguss.

No.	VI.	VII.	VIII.	
Leistung in Pfund Wasser	150	200	300	per Min. bei 4 Atm. Ueberdr.
Diameter der kleinsten Düse ca. .	7	8	9	Millimeter.
Flansch-Durchmesser für alle Anschlüsse	5	5	5	Zoll rhld.
Rohrweiten für Wasser- und Dampf-Eingang und Speise-Ausgang	131	131	131	Millimeter.
Rohrweiten für Wasser- und Dampf-Eingang und Speise-Ausgang	1 $\frac{3}{4}$	1 $\frac{3}{4}$	1 $\frac{3}{4}$	Zoll rhld.
Rohrweiten für Wasser- und Dampf-Eingang und Speise-Ausgang	46	46	46	Millimeter.
Dimensionen der Platte FF	10	10	10	Zoll rhld.
Länge	262	262	262	Millimeter.
Breite	5 $\frac{1}{2}$	5 $\frac{1}{2}$	5 $\frac{1}{2}$	Zoll rhld.
Breite	144	144	144	Millimeter.
Fig. 12. Injecteur-Preis	52	52	52	Thlr. Preuss. Courant.
" 8. Speise-Ventil-Preis	8	8	8	do. " "
" 9. Wasserregulirhahn-Preis ganz in bestem Metall	16 $\frac{1}{2}$	16 $\frac{1}{2}$	16 $\frac{1}{2}$	do. " "

In der Praxis hat sich bei Locomotiven ergeben, dass eine lichte Weite des Dampfrohres von 1 $\frac{1}{2}$ " \varnothing genügt.

Sollen höhere Leistungen als 300 Pfd. per Minute erzielt werden, so ist das besonders zu vereinbaren!

NB. Die Preise für den Injecteur verstehen sich combinirt mit je 2 Stützen, nach Fig. 6 oder 7. Wenn ein Speise-Ventil, Fig. 8, mitgeliefert wird, wird auf Seite **B** kein Stützen angeschraubt.

Preis der Vorrichtung zum Einstellen der Wasserhähne, Schlüsselstange mit Handgriff und Halslager resp. Zugstange mit Karbel } Je nach Angabe und Ausführung billigst.
 Preis der Vorrichtung für das Niederhalten der Luft-Ventile (Stanga mit Halslager, Schraube und Stellrad) }

Es empfiehlt sich, das Luft-Ventil mit Vorrichtung zum Niederhalten zu versehen, weil man dann durch den Injecteur das Tenderwasser anwärmen kann, und die Wärmeröhre und Hähne dadurch erspart.

Bei Bestellung bitten wir anzugeben:

- 1) Leistung, ob 150, ob 200, ob 300 \varnothing Wasser per Minute.
- 2) Nummer der Figuren, welche mit dem Injecteur combinirt werden sollen.
- 3) Angabe der Vorrichtung für das Einstellen des Wasserhahns.
- 4) " " " für das Niederhalten der Luft-Ventile.
- 5) " " " höchsten und niedrigsten Dampfspannung; für diese Grenzen wird dann der Injecteur auch practisch geprüft.

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Klasse der nicht saugenden Injecteurs.

Fig. 13.

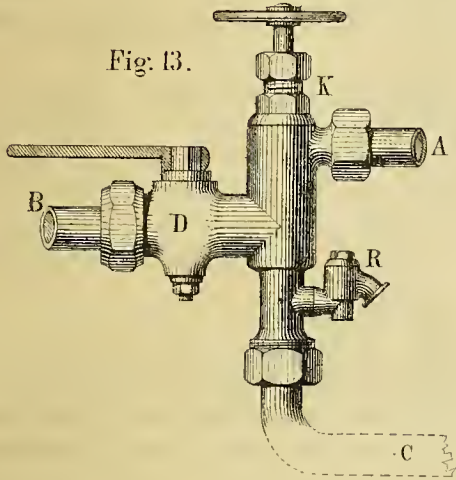


Fig. 15.

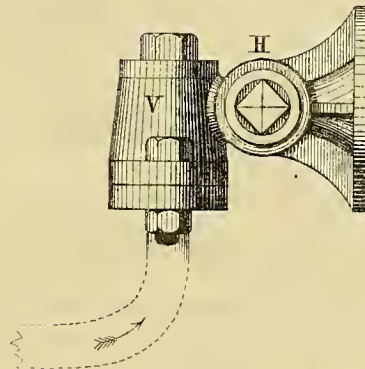


Fig. 14.

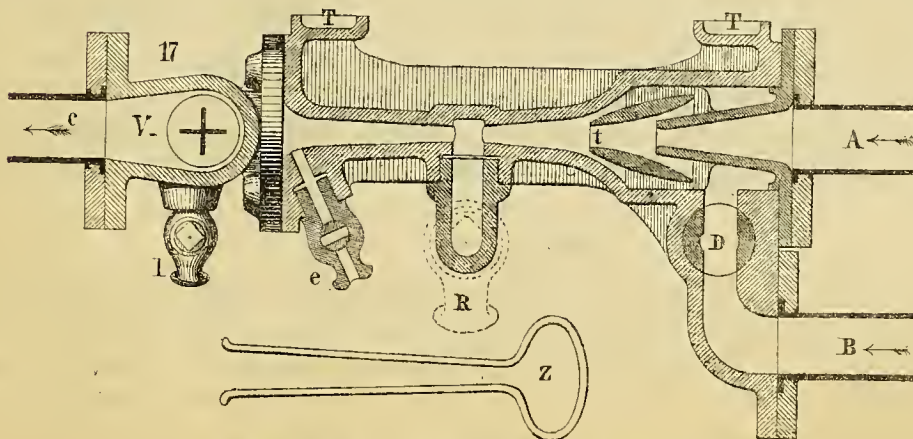
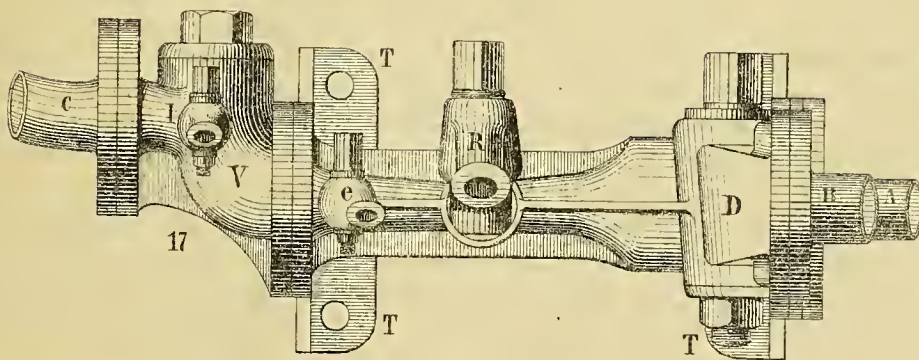
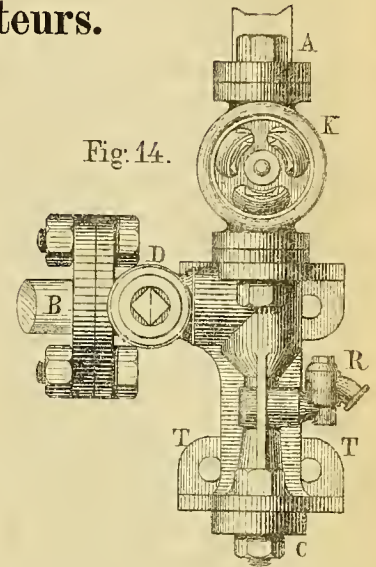


Fig. 16.

Injecteur Friedmann

für Locomotiven, Dampfschiffe und stationaire Kessel.

Injecteur Friedmann

für Locomotiven, Dampfschiffe und stationaire Kessel.

Der **Injecteur Friedmann** gehört, wie schon die Classificirung angiebt, zu den Injecteurs, welche nicht saugen und daher der Wasserzuführung bedürfen, die Construction desselben erinnert an die rühmlichst bekannten Injecteurs **Krauss** und **Schau** und verbindet er alle Vortheile derselben mit, durch seine specielle Ausführung bedingten, für viele Fälle sehr angenehmen Vorzügen. Es ist derselbe überall am Platze, wo ihm das Wasser von Oben zugeführt werden kann, was bei **Locomotiven** und **Schiffen** mit der grössten Leichtigkeit erzielbar und bei **stationairen Kesseln**, wie weiter unten specieller angegeben, auch unschwer erreichbar ist.

Die Vorzüge dieses Injecteurs gegen andere Constructionen lassen sich mit denen des Injecteur **Schau** in Parallele stellen und sind kurz folgende:

- 1) Zweite Wasseraufnahme unter Luftabschluss.
- 2) Geringere Grösse bei gleicher Leistung.
- 3) Arbeits-Vermögen von 15 Pfd. bis 10 Atm. und darüber.
- 4) Geringerer Dampf-Verbrauch.
- 5) Geringerer Preis. (Verhältnissmässig, da die Ausführung ganz in Metall erfolgt.)

Umseitige Zeichnung giebt in Fig. 13 den Typus eines 2 Millim.-Injecteurs für stationaire Kessel, — in Fig. 14 den Typus eines 3—6 Millim.-Injecteurs für stationaire Kessel und Schiffe. 2 und 3 Millim.-Injecteur werden vertical gebraucht, die übrigen Nummern ab 3 Millimeter-Injecteurs horizontal. Fig. 15 giebt den für stationaire Kessel und Schiffskessel passenden Speisekopf, welcher unmittelbar an dem betreffenden Kessel anzubringen ist und aus dem Speise-Ventil **V** und dem Absperrhahn **H** besteht. Statt desselben können auch unsere combinirten Speise-Ventile, Tafel VI Fig. 8 und 9, Anwendung finden. Fig. 16 giebt den Typus eines Injecteurs in den Grössen über 6 Millim., welche besonders als Locomotiv-Injecteurs Anwendung finden. Der Durchschnitt erläutert die Zusammensetzung und zeigt die Abweichungen gegen Construction **Schau**. Das Düsensystem ist hier gleichfalls ein festes unveränderliches und besteht der Hauptunterschied gegen den Injecteur **Schau** in der Verlegung der zweiten Wasseraufnahme — an die Stelle, wo die grösste Geschwindigkeit des Dampfstrahls stattfindet — resp. durch Anordnung der Zwischendüse **t**. Es wird dadurch die Speisung mit beträchtlich wärmerem Wasser ermöglicht und die Verkleinerung der Dampfdüse um etwas erzielt. Bei allen in der Zeichnung gegebenen Figuren bezeichnen gleiche Buchstaben gleiche Theile. Bei **A** ist der Dampfengang, bei **B** der Wasserzugang, bei **C** der Speiseausgang. Das Dampf-Ventil **K** befindet sich bei 2—6 Millim.-Injecteurs unmittelbar am Injector angeschraubt, bei grösseren Injecteurs kann, wenn solches verlangt wird, eines nach Tafel VI gewählt werden. Bei Locomotiven ist ein Dampf-Ventil meist vorhanden. Der Wasserhahn **D** befindet sich unmittelbar am Injector und wird stets mitgeliefert, ebenso das Luft- und Ueberlauf-Ventil **K**. Das Speise-Ventil Fig. 17 oder der Speisekopf Fig. 15 muss extra bestellt werden. Die Zange **Z** dient zum etwaigen Herausheben der Zwischendüse **t** behufs Reinigung. Am Injecteur-Körper befinden sich die Taten **T**, welche zur Befestigung dienen. Am 2 Millim.-Injector ist hinterwärts nur ein starker Dorn mit Mutter dazu vorhanden. Das Luft-Ventil **R** ist bei den Locomotiv-Injecteurs mit Druckschraube versehen, um das Ventil niederhalten und so das Tenderwasser vorwärmen zu können. An den Locomotiv-Injecteurs befindet sich ferner das Sicherheitshähnchen **e**, welches den Zweck hat, nach Oeffnung die Ingangsetzung zu erleichtern resp. das Erkennungszeichen zu geben, ob der Injecteur arbeitet, in diesem Falle muss Wasser hier ausspritzen. An den Speise-Ventil 17 ist ausserdem noch bei Locomotiv-Injecteurs ein Ablasshähnchen **l** angebracht. Die Hähne **D**, **e** und **l** so wie die Schraube von **B** müssen für den Locomotivbedarf mit entsprechenden Steckschlüsseln versehen werden, um solche vom Führerstande aus bedienen zu können. Diese Steckschlüssel werden nicht mitgeliefert.

Montage.

Der Injecteur ist im allgemeinen so zu placiren, das ihm das Wasser von oben her zufliesse. Bei **stationairen Kesseln** wird daher oberhalb des Injecteurs ein Bassin anzuordnen sein, was von Zeit zu Zeit mit einer Hand- oder sonstigen disponibelen Pumpe anzufüllen ist. Der Injector selbst wird immer möglichst in Kesselnähe gesetzt. Bemerkt muss noch werden, dass der zur Anwendung kommende Dampfdruck stets beträchtlich höher sein muss als der pp. Wasserdruck, weil sonst der Injector versagt. Dies ist besonders da zu beachten, wo man städtische Wasserleitungen benutzen wollte. Bei Schiffen wird der Injector an die Schiffswand, oder sonst in Kesselnähe, in einer solchen Höhe festgemacht, dass das zum Speisen bestimmte Wasser immer mit geringem Druck von selbst zuläuft. Für Schiffe, welche Condensations-Wasser mit verspeisen wollen, muss eine analoge Lage gewählt werden.

Bei Locomotiven ist die tiefere Lage, behufs Wasserzufluss, leicht dadurch erreichbar, dass man den Injector an der Wange des Locomotivrahmens, etwa 1—1½' unter dem tiefsten Tenderwasserniveau anbringt. Es empfiehlt sich, bei Locomotiven stets 2 dergleichen Injecteurs anzuwenden, einen kleinern, rechts, mit dem gewöhnlich gespeist wird, und einen grösseren, links, zur Reserve. Da Links- und Rechts-Modell verschieden ist, so ist bei Bestellung darauf zu achten.

Ingangsetzung.

Man öffnet erst ganz den Wasserhahn und darauf vorsichtig das Dampf-Ventil und schliesst danach den Wasserhahn soweit, bis das Ueberlaufen aus dem Luft-Ventil aufhört. Will der Injecteur nicht gleich gehen, so öffne man kurze Zeit das Sicherheitshähnchen e.

Hat man längere Zeit nicht gespeist, so öffne man erst ein klein wenig das Dampf-Ventil, um alles gesammelte Condensationswasser aus dem Dampfrohr etc. zu entfernen und verfähre nach Schluss derselben wie oben angegeben. Es empfiehlt sich, die Speisewassertemperatur nie übermässig hoch und in den Grenzen von 30° R. zu erhalten, obgleich noch 35° R. warmes Wasser bei einer Durchschnitts-Dampfspannung von 6—7 Atm. verspeist werden kann! Will man bei Schiffsinjecteurs bei Niederdruck mit sehr warmem Wasser bis 50° R. speisen, so ist das besonders anzugeben und muss der Injecteur dann besonders dazu adjustirt werden. Die Stellung des Dampf- und des Wasserhahnes sind nur bei grossen Differenzen im Dampfdruck zu ändern. Beim Abstellen verfährt man in derselben Reihenfolge wie beim Anstellen, schliessend.

Dimensionen und Preis-Verzeichniss.

Ausführung ganz in Metall und an allen Anschlüssen schmiedeeiserne Gegenflantschen.

No.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	
Diameter der kleinsten Düse	2	3	4	5	6	7	8	9	Millimeter.
Leistung bei 4 Atmosphären	5—10	10—15	25	50	75—100	150	200	300	Pfd. Wasser p. Min.
Anschlussflantschen für den Dampf- eingang	Ueberwurf- Mutter.	Ovaler Flantsch.	Rund.	Rund.	88	112	118	122	Millimeter Diam.
Anschlussflantschen für Wassereingang und Speiseausgang	do.	do.			88	100	105	110	Millimeter Diam.
	do.	do.			80	100	105	110	Millimeter Diam.
Rohrweiten für den Dampf- und Wasser- eingang und Speiseausgang	½	¾	1	1	1¼	1¼	1½	1½	Zoll rhld. Diam.
	13	20	26	26	33	33	39	39	Millimeter Diam.
Injecteur-Preis	20	30	36	46	52	60	66	76	Thaler.
Preis eines Speise- oder Dampf- absperrentils in Metall	3½	4	4½	5½	7½	11	15	17½	,
Preis eines Speisekopfs oder combinirten Speise-Ventils, Tafel VI. Fig. 8 & 9	6¾	8¼	9¾	11¾	14½	17½	20½	25½	,

Die Preise für 2, 3 und 6 Millim.-Injecteur verstehen sich incl. Dampfabsperrentil und Wasserhahn. Die Preise ab 7, 8 und 9 Millim.-Injecteur verstehen sich nur inclusive Wasserhahn.

Bei Bestellung bitten wir anzugeben:

- 1) Nummer resp. Leistung des Injecteurs in Pfund Wasser per Minute.
- 2) Ob der Injecteur für stationaire Kessel, Dampfschiffe oder Locomotiven verwendet werden soll. Wir führen diesen Injector darum speciell für Dampfschiffe auf, weil er ganz von Metall ist und unter Umständen auch bei Niederdruck mit Wasser bis 50° R. zu speisen im Stande ist. Wird das verlangt, so ist das besonders anzugeben.
- 3) Höchste und niedrigste Dampfspannung, und wird der Injector für diese Grenzen dann auch practisch probirt.
- 4) Für die Nummern ab V. ob Rechts- oder Linksmodell geliefert werden soll.
- 5) Ob ein Speise-Ventil, Speisekopf oder combinirtes Speise-Ventil dazu zu liefern ist.

Auf directe Anfragen und definitive Bestellungen gehen wir gern mit unsern Erfahrungen, Rathschlägen, Skizzen über Montage etc. zur Hand.

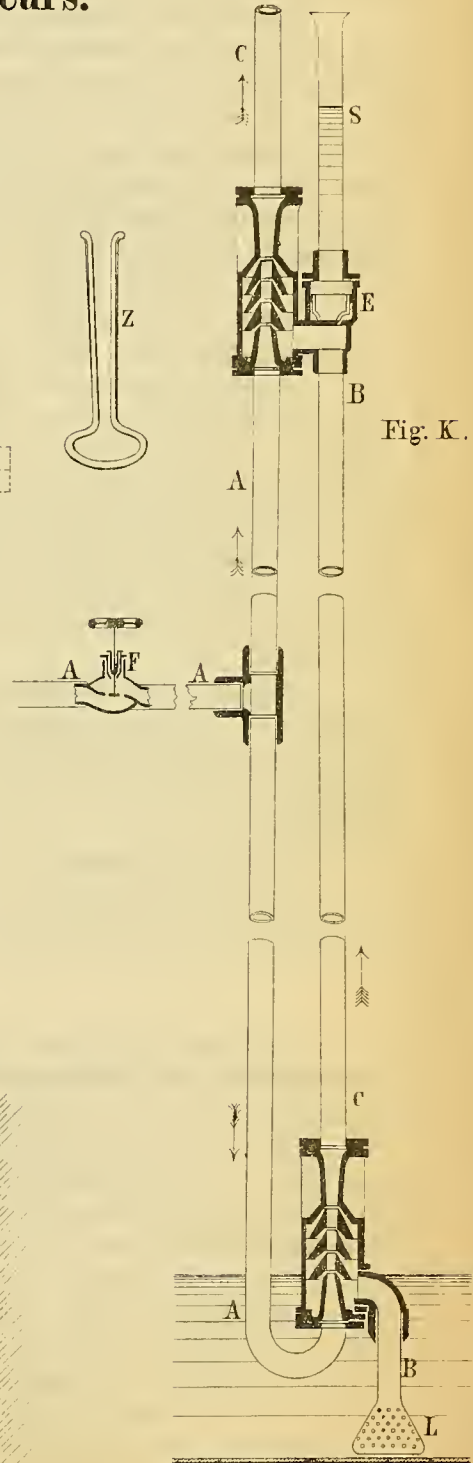
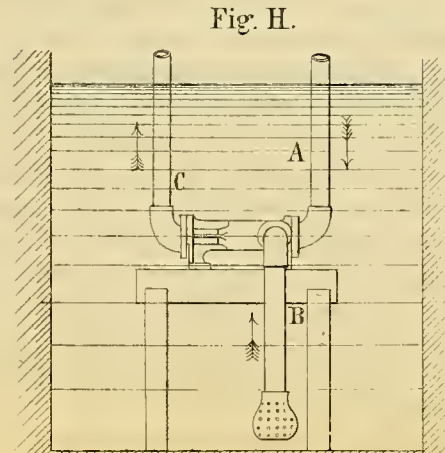
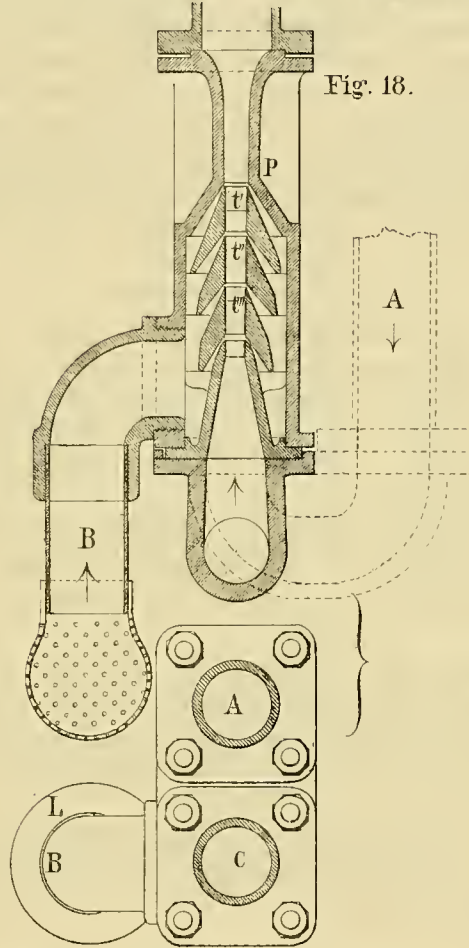
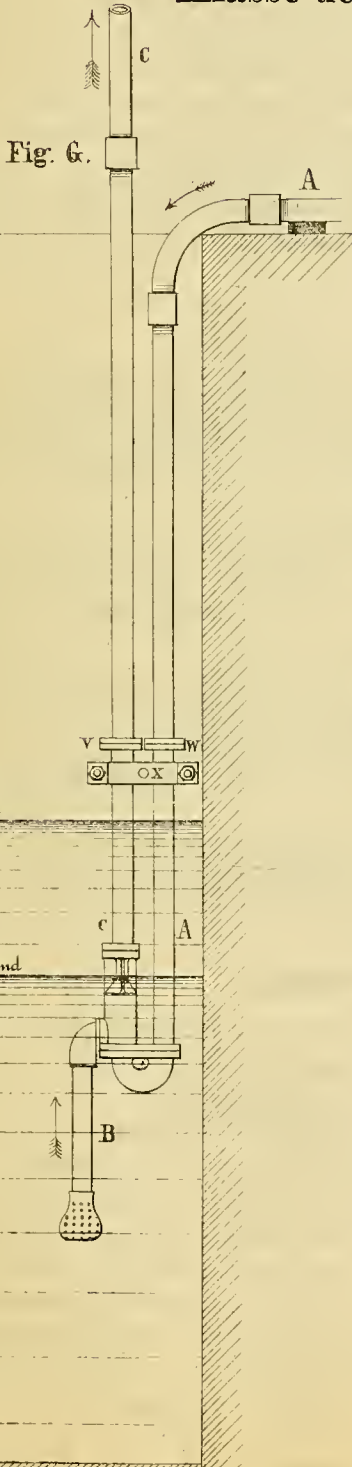
Obige Preise gelten für diejenigen Staaten und Länder, in denen dieser Injecteur nicht patentirt ist.

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Operring 10.

Klasse der nicht saugenden Injecteurs.



Reservoir-Injecteur Friedmann.

Reservoir-Injecteur Friedmann.

Construction.

Umseitige Zeichnung Fig. 18 stellt den Reservoir-Injecteur in verkleinertem Maassstab im Grundriss und Durchschnitt dar und giebt die Anordnung für die verschiedenen weiter unten besprochenen Montagen.

In allen Figuren ist **A** das Dampfrohr, **B** das Wasserzuführungs- (resp. Saugrohr), **C** das Druckrohr, **m** das Dampfmondstück, **t'**, **tt''**, **ttt'''** die Zwischendüsen und **L** der Seiher.

Die Pumpe arbeitet in folgender Weise: Der Dampf, welcher durch das Dampfrohr **A** der Pumpe zugeleitet wird, entströmt dem Mundstück **m** und durchströmt die aufeinander folgenden Zwischenrohre **t'** **t''** **t'''** und das Endrohr **p**. Beim nacheinander folgenden Eintritt in jedes der Zwischenrohre bis zum Einmünden in das Endrohr saugt der Dampf, sich immer mehr condensirend, jedesmal eine gewisse Wassermenge neu an, überträgt seine lebendige Kraft stufenweise (und in Folge dessen mit einem viel kleineren als bisher vorhanden gewesenen Stossverluste und also mit einem ebenso viel grösseren Nutzeffekte) an das nach und nach anwachsende Wasserquantum, welches schliesslich mit sehr grosser Geschwindigkeit durch das Endrohr **p** hindurch strömt und in der Erweiterung dieses Endrohres die Geschwindigkeit in Ueberdruck verwandelt, mittelst welchem es in dem Druckrohr **C** in die Höhe steigt und in das zu füllende Wasserreservoir einfliesst.

Durch die Condensation des Dampfes wird das beförderte Wasser etwas erwärmt; je nach der zu bewältigenden Druckhöhe beträgt diese Erwärmung 5 bis 15 Grad Réaumur.

Durch die grossen Ein- und Ausströmungsgeschwindigkeiten in den Zwischenrohren werden alle im Wasser enthaltenen Schlamm-, Sand- oder sonstigen fein vertheilten Verunreinigungen oder sich entwickelnden Niederschlagsproducte gewaltsam mitgerissen, überdies fliesst nach jedem Abstellen der Pumpe das die Rohrleitung erfüllende Wasser rasch zurück und wäscht das Innere der Pumpe, sowie den Seiher sehr zweckmässig aus; diese Umstände erklären das ungemein lange Reibleiben des ganzen Apparates.

Mittelst der mit jeder Pumpe gelieferten Fig. z gezeichneten Federzange kann jedes Zwischenrohr herausgezogen werden. Indem man nämlich die Zange in ein Zwischenrohr bis über dessen unteren Rand einschiebt, springen die beiden Enden der federnden Zange über den Rand vor und nehmen beim sanften Zurückziehen der Zange das gefasste Zwischenrohr mit.

Ist die Pumpe zusammengestellt, so bleiben alle Theile fest und unbeweglich, und erheischen also weder eine Schmierung noch sonstige Wartung. Auch versagen kann diese Pumpe nicht, das erhellt aus Vorstehendem, es müssten denn die Zwischenrohre beim Zusammenstellen der Pumpe mit ganz specieller Ungeschicklichkeit in der Reihenfolge verwechselt worden sein; dem kann übrigens durch das sehr leichte Nachschauen und Reinigen der Pumpe einfach abgeholfen werden.

Dass weder Transmission noch sonstige Bewegungs- oder Aufstellsvorrichtungen erforderlich sind, erfolgt aus der beschriebenen Wirkungsweise der Pumpe von selbst; ein einfacher Dampfkessel und Gasrohre oder Kupferrohre, sind alles, was man zur Inbetriebsetzung braucht.

Montage resp. Aufstellung.

Soll dieser Reservoir-Injecteur in einem Brunnenschachte zur Verwendung kommen, also etwa als Stationspumpe für Eisenbahn-Wasserstationen dienen, oder für Bergwerks-Gruben etc., so zeigt Fig. G deren Disposition. Es ist dieselbe zunächst mit einer solchen Parthie Dampfrohr und Druckrohr zu versehen, dass deren Länge etwas grösser sei als der Höhenunterschied zwischen dem höchsten und niedrigsten Wasserstande, welcher im Brunnen vorkommt. Die oberen Enden dieser beiden Rohrstücke sind mit Flantschen **v** und **w** und unter denselben mit einer Art Bügel **x** zu versehen. Die Dampfrohrparthie ist von der Pumpe bis zum Bügel **x** mit gefettetem Hanf reichlich und fest einzuwickeln und dann mit getheerter Leinwand zu umhüllen. Die Pumpe wird an den beiden Rohren angebracht und mittelst Bügel in den Brunnenschacht hinabgelassen, und zwar so tief, dass sie selbst beim niedrigsten Wasserstande noch in's Wasser taucht und der Bügel **x** nebst Flantschen noch beim höchsten Wasserstande ausser Wasser sind. Der Bügel **x** wird an der Brunnenwand seitlich angebolzt, so dass Rohre und Pumpe daran hängen. Alsdann wird zum Anschluss der Dampf- und Druckrohrleitung geschritten und müssen die Rohre vorher gut gereinigt sein.

An entsprechender Stelle wird das auf Verlangen mitgelieferte Dampf-Ventil eingeschaltet und das ganze Rohr mit schlechten Wärmeleitern umhüllt.

Bei sehr tiefen Brunnen muss, wenn die Druckhöhe der zur Anwendung kommenden Kesseldampfspannung nicht entspricht, zur Combination zweier (resp. mehrerer) Reservoirpumpen geschritten werden, wie in Fig. K angedeutet.

Der obere Injector ist, wie Fig. K zeigt, mit einem am unteren Ende des Steigrohres **S** befindlichen Ventil

E versehen, welches zusammen mit dem Steigrohre den Zweck erfüllt, eine Uebereinstimmung der von beiden Injectoren gelieferten Wassermengen zu erzielen. Wenn nämlich der untere Injector mehr Wasser liefert als der obere, so steigt dieses in Rohr S empor und bildet dort eine Wassersäule, welche die Aspiration und Wasserbeförderung des oberen Injectors erleichtert. Liefert umgekehrt der obere Injector mehr Wasser als der untere, so schliesst sich das Ventil E und es entsteht im Druckrohr des Injectors eine Verdünnung, welche die Arbeit dieses letzteren erleichtert und die des oberen um ein Entsprechendes erschwert. Für solche Doppel-Injectoren lange Dampfleitungen etc. empfiehlt es sich, überhitzten Dampf anzuwenden. Die Anwendung dieser Reservoir-Injectoren ist keine beschränkte und dürften dieselben als Montejues in Zuckerfabriken, Brennereien und Brauereien, Mineralbädern und als Schiffsleckinjectoren (Pumpen) bestens zu empfehlen sein, doch behalten wir uns vor, über die diversen Anwendungsfälle auf besondere Anfrage mit unseren speciellen Rathschlägen und Vorschriften in Action zu treten. Auch stehen wir mit Attesten über Anwendung und Bewährung dieser Pumpen als Reservoir-Injecteurs für Eisenbahn-Wasserstationen den verehrlichen Bahndirectionen gern zu Diensten.

Wird der Reservoir-Injector als transportable Pumpe, z. B. bei Fundament-Ausschöpfungen benutzt, wobei er sich selbst bei schlammigem Wasser sehr gut bewährt, so wird er, wie in Fig. H angegeben, auf einen kleinen Holzblock gelegt und mittelst Krampen daran befestigt, das untere Ende des Seiher mit einem Korbgeflecht (weit genug) umhüllt und kann statt des Druckrohrs ein einfacher Spritzenschlauch verwendet werden. Das Ganze wird in das Fundamentwasser gelegt.

Ingangsetzung und Handhabung.

Soll die Pumpe in Gang gesetzt werden, so wird das Dampfabsperrrventil geöffnet. Das Wasser gelangt je nach der vorhandenen Druckhöhe um 5 bis 15 Grade erwärmt in das Reservoir.

Um die Pumpe abzustellen, wird das Dampfabsperrrventil geschlossen.

Nach dem Abstellen fliesst das die Druckrohrleitung erfüllende Wasser, wie bereits erwähnt, rasch zurück und wäscht das Innere der Pumpe, sowie das Sangsieb sehr zweckmässig aus; eine bleibende Störung im Innern der Pumpe ist deshalb gar nicht gut denkbar, ist auch bei vielfältigen Anwendungen noch nicht constatirt. Reinheit der Rohre ist natürlich Bedingung.

Eine vorübergehende Störung, z. B. Verlegen des Seiher L, bemerkt man übrigens bei der Pumpe leicht daran, dass dieselbe weniger Wasser fördert, oder dass das Wasser erwärmer als sonst ins Reservoir gelangt. Dem Verlegen des Seiher ist leicht dadurch abgeholfen, dass man die Ausmündung des Druckrohres verstopft und Dampf in die Pumpe lässt. Derselbe sucht dann seinen Ausweg durch die Sieblöcher des Seiher und reinigt dieselben. Sollte sich übrigens je die Nothwendigkeit ergeben, die Pumpe innerlich nachschauen zu müssen, so werden die beiden Flantschen v und w losgemacht, die Pumpe wird mittelst des Bügels x herausgezogen, das Dampfrohr A abgenommen und mittelst der Zange Z die Pumpe zerlegt. Nur ist beim Zusammenstellen Acht zu geben, dass die Zwischenrohre in derselben Reihenfolge in die Pumpe wieder eingesetzt werden, in der sie herausgezogen wurden.

Im Innern der Pumpe kann, da keine Bewegung von Bestandtheilen stattfindet, nichts biegen oder brechen, es ist also auch nicht nöthig, Ersatzstücke mitzuliefern.

Dimensionen und Preis-Verzeichniss.

Ausführung der Injecteurs ganz in Metall, mit gusseisernem Krümmer nebst Fuss.

An allen Anschlüssen werden schmiedeeiserne Gegenflantschen mitgeliefert.

No.	I.	II.	III.	IV.	
Leistung bei 4 Atmosph. Ueberdruck	150	250	350	500	Pfd. Wasser per Minute.
Durchmesser der Dampf- und Druckrohre.	1½	1¾	2	2½	Zoll rhld.
	39	46	52	65	Millimeter.
Preis:	55	75	100	130	Thlr.
Erfordern zum Betrieb Kessel von	4	6	8	10	Pferdekraft.

Seiher aus Kupfer werden per Pfund mit 22½ Sgr. berechnet.

Werden Dampf-Ventile oder Speise-Ventile verlangt, so werden solche nach Maassgabe unseres Preiscourants, Tafel VI, berechnet. Für 2 combinirte Pumpen, analog Fig. K, gewählt, müssen die Dampfventile entsprechend grösser für den gemeinsamen Zugang sein.

Beträgt die zu bewältigende Druckhöhe vom niedrigsten Wasserspiegel bis zum Wasserspiegel des betreffenden Reservoirs

	40	60	75	90 Fuss rhld.
oder	12,5	19	24	28 Meter, so muss
die Dampfspannung	2	3	4	5 Atmosphären betragen.

Für Druckhöhen über 90' sind 2 Pumpen zu combiniren nach Fig. K und kann dann je nachdem die disponible Dampfspannung beträgt

	1	2	3	4	5	Atmosphären eine
Gesamtdruckhöhe von	40	80	115	140	170	Fuss rhld. erzielt werden.

Röhren-Kessel zum Betrieb complett armirt, sowie Dampf- und Druckrohre in Schmiedeeisen, Gusseisen und Messing oder Kupfer werden auf Verlangen nach vorheriger Vereinbarung laut Zeichnung gern mitgeliefert.

Obige Preise gelten für diejenigen Länder und Staaten, in denen dieser Injecteur nicht patentirt ist.



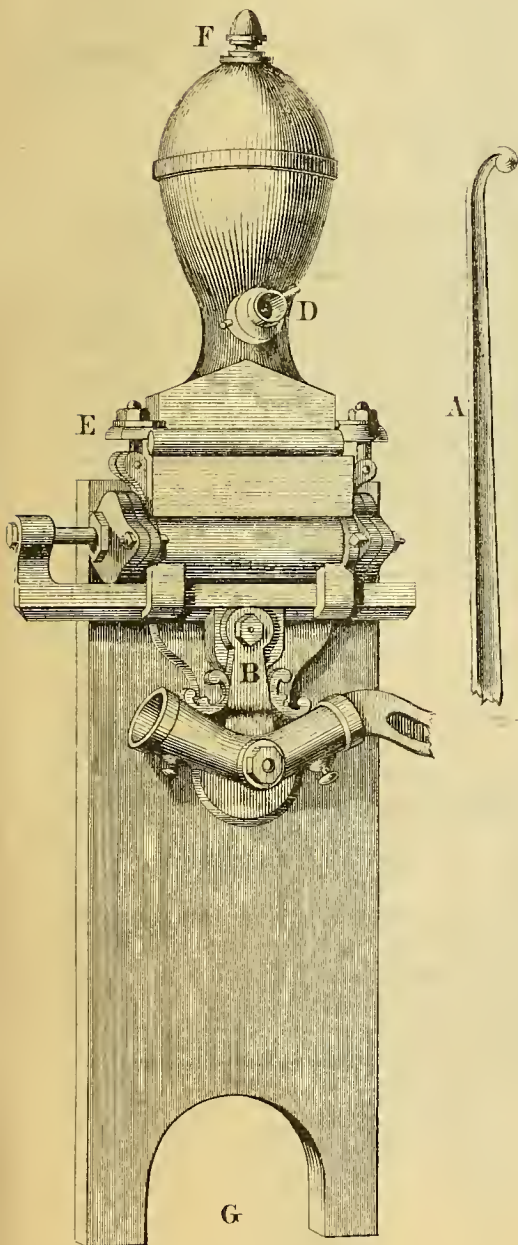
Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN, Lower Kingstr. 23. Hoestr. 202. Elisabethstr. 655-1. Opernring 10.

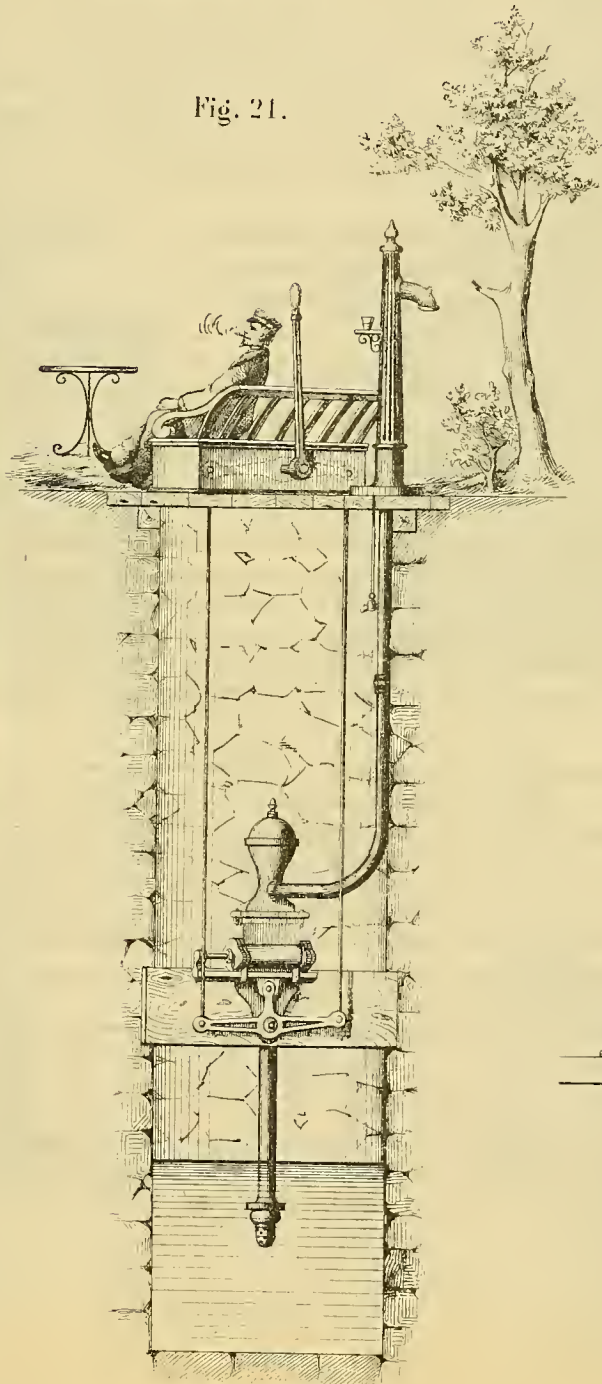
Hansbrow's Patent-California-Pumpe.

Fig. 19.



Auf Brett montirt mit Hand-Hebel-Betrieb.

Fig. 21.



In einem Brunnen montirt.

Fig. 20.

Mit Riemenbetrieb, auf Brett montirt.

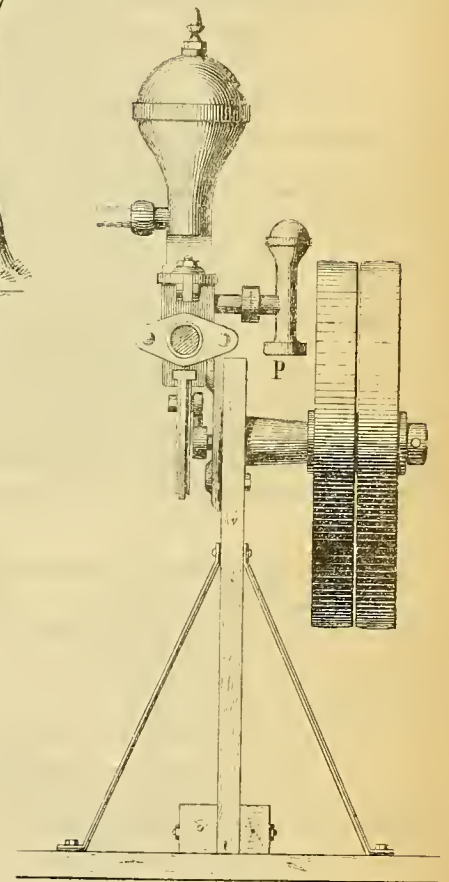
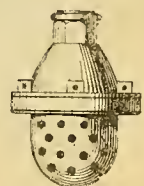


Fig. 22. Fuss-Ventil.



Bemerkungen zu Tafel VIIA.

Fig. 19, 20, 21, 22.

Fig. 19. Patent- (Hansbrow's California-) Pumpe für Hand-Hebelbetrieb.

Diese Pumpe zeichnet sich durch Einfachheit und Dauerhaftigkeit, sowie durch grossen Effect aus. Sie ist eine doppelt wirkende Saug- und Druckpumpe und durch den Windkessel befähigt, sowohl als Feuerspritze als auch als Gartenspritze zu dienen. Sie eignet sich auch gleichgut als Küchen- und Hauspumpe und zur Versorgung höher gelegener Bassins und kann als Brunnenpumpe verwendet werden.

Die Ventile, von Leder mit Deckscheiben, höchst einfach, sind leicht zugänglich. Die Pumpe bleibt immer gefüllt und giebt, sobald der Windkessel zur Function gelangt, einen ununterbrochenen Wasserstrahl. **Zeichnung Fig. 19 stellt die Pumpe auf einem Brett montirt dar; A** ist der Hebel durch den sie in Thätigkeit gesetzt wird, derselbe (in der Zeichnung abgebrochen skizzirt) kann rechts oder links in die Aufnahme-Hülsen gesteckt werden oder es können 2 Handhebel Anwendung finden. Durch den Hebel wird das Stück **B** bewegt, welches das Gleitstück **C** treibt und durch letzteres erhält die Pumpen-Kolbenstange mit dem Kolben ihre Bewegung. Das Saugrohr geht hinter dem Brett in die Höhe, **vergl. Fig. 20**, und hat oben einen Windkessel zur Verhütung von Stössen. Durch Lösung der Schraubenmutter **E E** können der Windkessel und demnächst die 4 Ventile zur Reinigung, event. Reparatur weggenommen werden. **D** ist der Wasserausgang, an den ein Schlauch oder Rohr befestigt werden kann. Soll die Pumpe als Spritze dienen, so muss die Schraube **a** oben am Windkessel fest zugezogen sein. Soll die Pumpe jedoch nur wie gewöhnlich als Wasserpumpe dienen, so ist diese Schraube etwas zu lüften, weil das geförderte Wasser sonst zu heftig abfliesst und sehr spritzt.

Wir fertigen diese Pumpen in drei verschiedenen Grössen, 3", 4" und 5" Diam.

Der Hub derselben beträgt bei allen 5" engl. = 131 Millim.

Die Leistung bei 35 vollen Doppelhüben beträgt wie folgt:

	bei der	3" = 78 Millim. Diam.	4" = 104 Millim. Diam.	5" = 131 Millim. Diam. habenden Pumpe.		
pro Stunde ca.		450	825	1300 Gallons Wasser	}	
od. ca.		4637	8869	13972 Zoll-Pfund		Für einen zweiten
od. ca.		80	148	233 Cub.-Fuss		Handhebel werden
Diameter der Saug- und Druckrohre	}	1½ 39	2 52	2½ Zoll rhld. 65 Millimeter		extra berechnet
Preis		36	48	60	Thlr.	

Diese Pumpen eignen sich nur für kalte Flüssigkeiten und solche, welche Gusseisen nicht angreifen.

Als **Fuss-Ventile** für dergleichen Pumpen und für **Injecteurs**, welche nicht zu warmes Wasser (25° R.) zu saugen haben, empfehlen wir die in **Fig. 10** dargestellten Leder-Ventile mit Seiher, die in folgenden Grössen für entsprechende Gasrohre ausgeführt werden.

	½	¾	1	1¼	1½	2	2½	Zoll rhld. Millimeter.
	13	20	26	33	39	52	65	
Preis	2	2½	3	4	5	6	7	Thlr.

Fig. 21 stellt eine solche Pumpe in einen Brunnen montirt dar und werden alle dazu nöthigen Theile von uns geliefert. Damit in der Bedeckung des Brunnens keine Lücke da entsteht, wo die Zugstangen durchgehen, ist der obere Hebel in zwei Böcken gelagert und die Welle nach aussen geführt, um das Ganze aber ein vollwandiger Kasten anzuordnen, welcher gleichzeitig als Bank benutzbar ist. Um das Einfrieren des Steigrohrs zu verhüten, ist ein Hähnchen **x** angebracht, welches von oben her geöffnet werden kann und so das Abfliessen des Wassers bis zu entsprechender Tiefe bewirkt. **Preis je nach Vereinbarung der Anlage.**

Fig. 20 giebt die Anordnung dieser Pumpe für Riemenbetrieb mit fester und loser Riemscheibe.

Die Riemscheiben sind bezüglich obiger Grössen ca.:

	3"	4"	5" Pumpe	
für die ca.	24" = 628 Millim.	26" = 680 Millim.	30" = 895 Millim. Diam. ⚙ gewählt.	
und deren Breite	2½" = 65 Millim.	2½" = 65 Millim.	2⅝" = 68 Millim. genommen.	
Preis	68	80	92	Thlr.

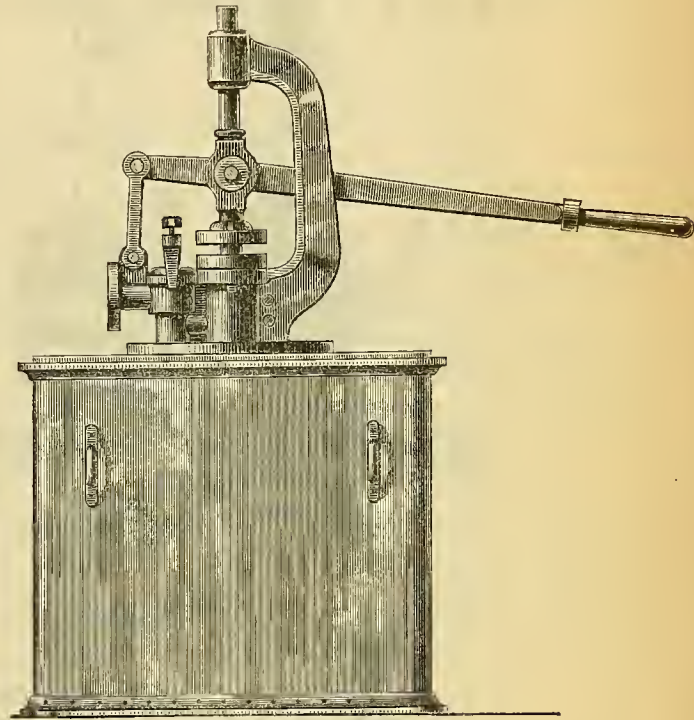
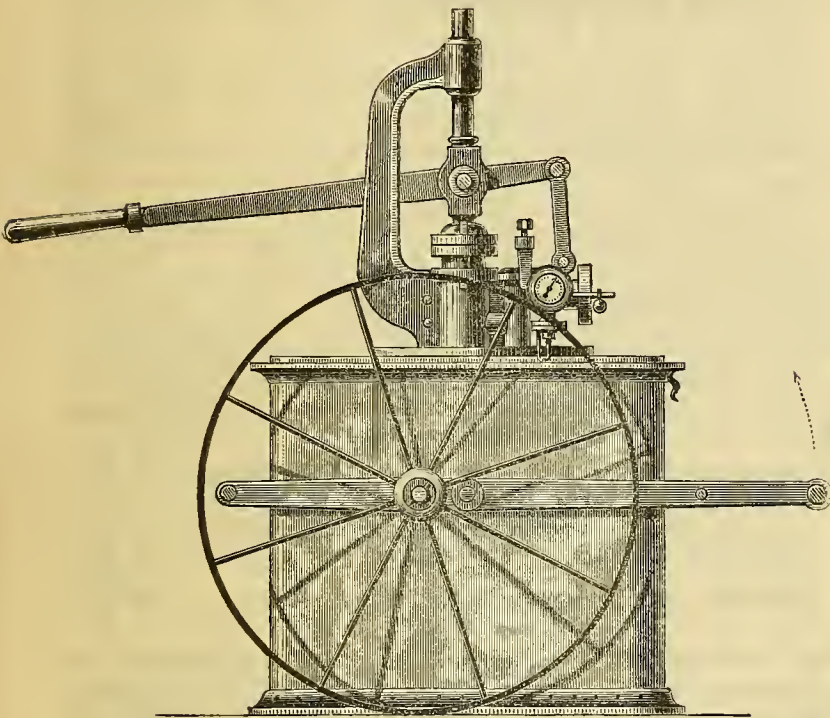
Das bei **p** anschliessende Saugrohr muss bei diesem Betriebe etwas gekröpft werden.

Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Fig. 29.

Fig. 28.

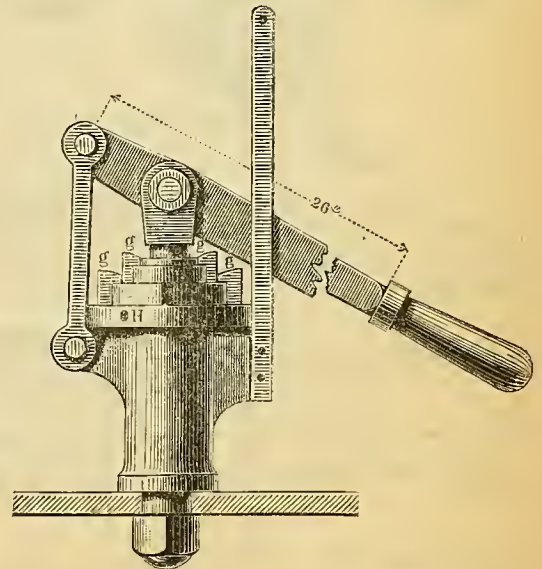
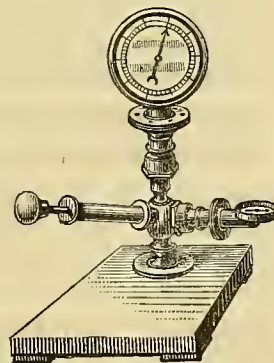
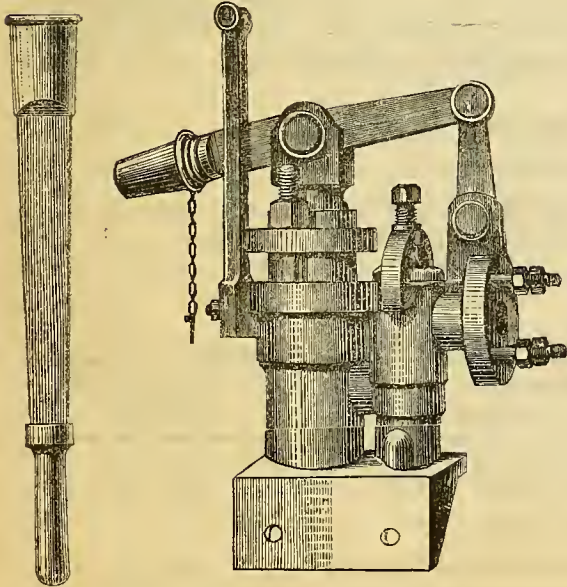


Kessel- und Rohr-Probir-Pumpe.

Fig. 31.

Fig. 32.

Fig. 30.



Luftpumpe

zum Probiren und Vergleichen
von Feder-Manometern.

Handspeise- und Druckpumpe.

Hydraul. Presspumpe

bis 200 Atmosphären.

verte!

Bemerkungen zu Tafel VIIA. Fig, 28, 29, 30, 31, 32.

Die in Fig. 28 und 29 dargestellte **Kessel- und Rohr-Probirpumpe** wird durch beistehenden Querschnitt in ihrer Construction veranschaulicht. Es ist die Einrichtung getroffen, dass ein Kolben *g* von $2\frac{1}{4}'' \varnothing = 59$ Millim. Diam. zum Füllen dient und ein Kolben *d* von $1'' \varnothing = 26$ Millim. Diam. als eigentlicher Druckkolben. Will man füllen, so verbindet man durch Vorsteckstifte Flantsch 1 und 2, das wäre z. B. Situation in Fig. 29, will man drücken, verbindet man in gleicher Weise Flantsch 2 und 3, das wäre Situation in Fig. 28. Dem kleinen Kolben dient dann der grosse als Pumpenstiefel. Der Hub beträgt $4''$ rhld. = 104 Millim. Der Pumpkörper besteht aus Gusseisen, der Druckhebel aus Schmiedeeisen, die Kolben und Ventile aus Metall. Die Liederungen sind aus Leder. Die Pumpe wird komplett geliefert auf schmiedeeisernem Wasserkasten, $24''$ hoch, $24''$ lang, $18''$ breit, mit Feder-Manometer bis 20 Atm. und Sicherheits-Ventil. Für höheren Druck muss ein Hydraulisch-Manometer, welches nach Preiscourant berechnet wird, Anwendung finden. Die Pumpe hält 50 Atmosphären aus. Für gewöhnlich wird dieselbe wie Fig. 28 geliefert, mit Oesen, durch welche behufs Transportiren Tragestangen gesteckt werden können. Wir liefern dieselbe aber auch fahrbar, nach Fig. 29, und ist die Einrichtung getroffen, dass der Pumpkasten für gewöhnlich fest aufsteht und die Räder erst frei werden und in Action kommen, wenn man die Handhabe anhebt.

Preis der Kessel- und Rohr-Probir-Pumpe auf schmiedeeisernem Wasserkasten mit Patent-Feder-Manometer bis 20 Atm. und Sicherheits-Ventil analog Fig. 28 80 Thlr.
Dieselbe fahrbar analog Fig. 29 115 "

Fig. 30. **Hydraul. Presspumpe, bis 200 Atmosphären** verwendbar, ganz aus Metall mit schmiedeeisernem Hebel, mit Hydraulisch-Manometer und Sicherheits-Ventil. Construction analog der Pumpe Fig. 28, 29, mit Doppelkolben, Füllkolben $1\frac{1}{2}'' \varnothing = 39$ Millim., Druckkolben $\frac{5}{8}'' \varnothing = 16$ Millim. Beistehender Grundriss verdeutlicht die Auswechslung der Kolben, welche hier einfach dadurch erzielt wird, dass man den Handhebel *H* um 90° dreht. In der gezeichneten Stellung würde der kleine Kolben sich heben. Die betreffende Verbindung und Lösung wird durch die Haken *g* erzielt. Soll diese Pumpe für noch höheren Druck als 200 Atmosphären verwendet werden, so ist das besonders zu vereinbaren.

Preis exclusive Wasserkasten 90 Thlr.
Wasserkasten wie oben dazu 11 "

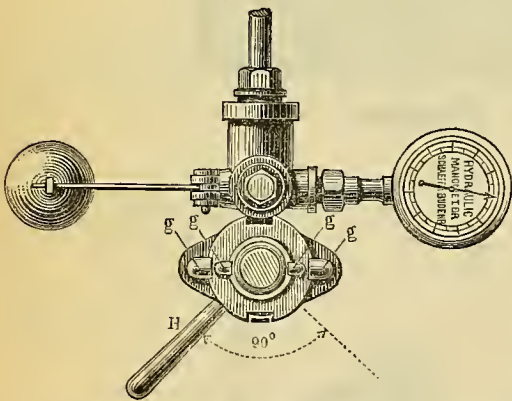
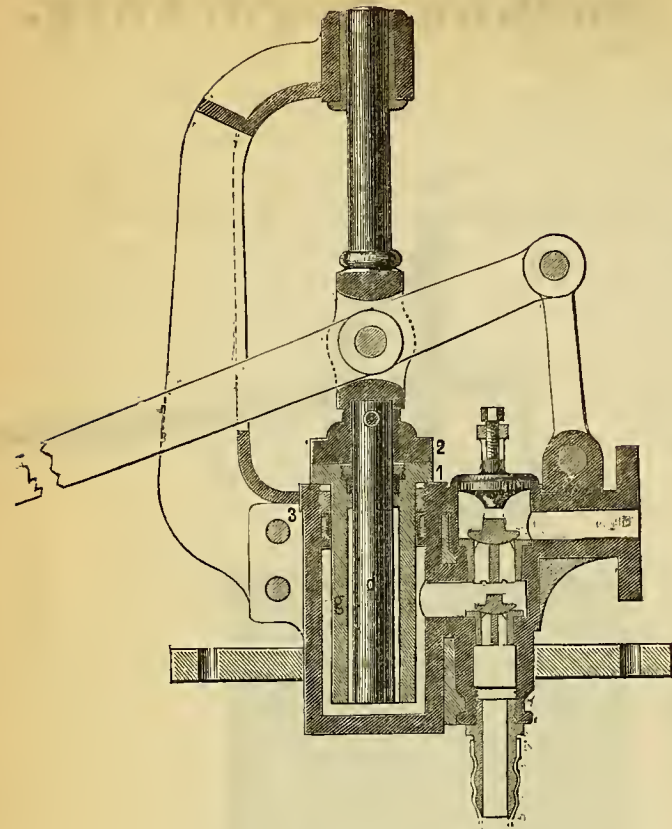


Fig. 31. **Handspeise- und Druckpumpe**, wird mit Ausnahme der Sauge- und Druck-Ventile ganz in Eisen ausgeführt. Handhebel von Schmiedeeisen und abnehmbar. Der Kolben ist ein Plüngerkolben. Die Pumpe eignet sich vorzüglich als Handspeisepumpe für stationäre Kessel und Locomobilen und wird auch als Druckpumpe verwendet. Auf Verlangen wird gleichfalls Wasserkasten aus Schmiedeeisen dazu geliefert.

Dimensionen, Leistung und Preis-Verzeichniss.

	Stempel-Diameter	Hub	Leistung bei 36 Hübem ca.:		Preis:
			Pro Minute	Pro Stunde	
1) Klein Modell.....	$1\frac{3}{4}''$ 46 Millim.	$2\frac{1}{2}''$ 65 Millim.	} $\frac{1}{8}$ Cub.-Fuss Wasser	7 Cub.-Fuss Wasser	25 Thlr.
Leistung bei 30 Hübem:					
2) Gross Modell.....	$2\frac{1}{2}''$ 65 Millim.	$4''$ 104 Millim.	} $\frac{1}{3}$ Cub.-Fuss Wasser	20 Cub.-Fuss Wasser	37 "

Fig. 32. **Kleine Luftpumpe**, $\frac{1}{2}''$ Kolben, ganz in Metall auf Brett, zum Probiren und Vergleichen von Manometern, aus Zeichnung verständlich, wird auf Verlangen als Druck oder Vacuumpumpe ausgeführt. **Preis 18 Thlr.**

Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in Buckau-Magdeburg.

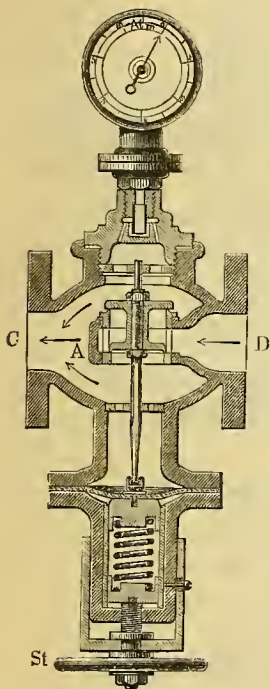
MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Patent-Dampfdruck-Reducir-Ventil,

genannt

„Druckregulator“.

Fig. 1.



Der Druckregulator, in Fig. 1 im Durchschnitt dargestellt, dient zum Reguliren resp. zur Verminderung des Druckes der directen Dämpfe (oder sonst gespannter Gase) zum Beispiel für Koch- und Heizapparate, in welchen eine geringere Spannung als die im Kessel selbst vorhandene sein muss. Der Apparat erhält diese Druck-Verminderung constant und selbstthätig innerhalb gewisser Grenzen und kann die Verminderung, bei Apparaten bis 2" Diam., im Minimum bis auf 2 Pfund pro □" gebracht werden, bei grösseren Apparaten dürfte 4 Pfd. per □" das Minimum sein. — Im Maximum ist die Grenze nicht eng vorgeschrieben, doch dürfte für die gewöhnlichen Fälle als solches 30 Pfd. pro □" zu bezeichnen sein. —

„Es empfehlen sich diese Druckregulatoren wegen ihrer Empfindlichkeit und Einfachheit ganz besonders gut an Stelle der Savallschen Schwimmer für Spiritus-Rectifications- (Colonnen-) Apparate, sowie für Maischdestillir-Apparate, da Savallsche Schwimmer einerseits „viel kostspieliger, andererseits viel weniger zuverlässig und unempfindlicher sind als unsere „Druckregulatoren, was den Herren Brennereibesitzern, sowie den dergleichen Colonnen-Apparate „bauenden Fabrikanten hiermit zur Nachricht gereichen möge.“ —

Der Druckregulator wird bei Colonnen-Apparaten unten unmittelbar an der Heizschlange angeschlossen und empfiehlt es sich, ausser dem Manometer am Druckregulator, welcher den reducirten Druck in den unteren Parthieen anzeigt, noch ein Manometer oberhalb an der Blase anzubringen, welches den reducirten Druck in den obersten Parthieen erkennen lässt und wonach der Druckregulator eingestellt wird.

Wir lassen über deren Brauchbarkeit zur Bequemlichkeit des Publicums hier gleich ein Attest folgen.

Herren Schäffer & Budenberg in Buckau-Magdeburg.

Hierdurch bescheinige ich Ihnen mit Vergnügen, dass das von Ihnen gelieferte Dampfdruckreducir-Ventil sich bei continuirlich arbeitenden Maischdestillir-Apparaten vorzüglich bewährt hat und seiner grossen Einfachheit wegen allen anderen sogenannten Regulatoren bei diesen Apparaten vorzuziehen ist.

gez. **F. Walkhoff.**

Zur Erklärung des Apparats diene Folgendes: In dem Gehäuse A befindet sich ein Doppelsitz oder entlastetes Ventil, welches unterhalb mit einem Kolben in Verbindung steht. Der Kolben geht ohne Liederung und ist durch Membran gegen die Einwirkung des Condensations-Wassers geschützt, wodurch seinem Festsetzen sicher vorgebeugt ist. Von unten her ist der Kolben durch eine Spiralschraubenfeder, die mittelst Schraube und Stellrad nach Maassgabe des zu erzielenden Druckes zusammengepresst werden kann, belastbar. Das Instrument wird oberhalb mit einem Manometer versehen und kann man daran den reducirten Druck beobachten.

Montage. Soll der Apparat functioniren, so wird er in eine Rohrleitung so eingeschaltet, dass bei D der directe Dampf eintritt und Seite C dem Raume zugekehrt ist, in welchem die Reduction erforderlich. Es ist gut, das Ventil möglichst nahe diesem Raume (Verdampfpfanne, Colonne etc.) zu placiren und die Rohrleitung auf Seite C, falls solche erforderlich, fallend anzuordnen, damit sich der Apparat nie ganz mit Condensations-Wasser anfüllen kann. Zur Vermeidung der Verwechselung von Ein- und Ausgang ist auf dem Gehäuse ein Pfeil in Richtung D C aufgegossen.

Function. Tritt Dampf bei **D** ein, so wird derselbe so lange durch das Doppelsitzventil entweichen, bis auf Seite **C** der Druck erreicht ist, welcher der Belastung auf dem Kolben von unten her durch die gespannte Spiralschraubfeder entspricht. — Der reducirte Druck wirkt dann auf den Kolben von oben her und bringt das Doppelsitzventil zum Schluss. Der Schluss dauert so lange, bis der Druck auf Seite **C** etwas nachlässt, worauf sofort das Spiel auf's Neue beginnt und sofort die Druckvermehrung bis zu dem gewünschten Grade der Reduction wieder hergestellt wird. Dieses Spiel geht, so lange der Betrieb dauert, ununterbrochen fort.

Die Einstellung des gewünschten reducirten Drucks erfolgt, indem man das Manometer auf dem Apparat beobachtet und an dem Stellrade **St.** so lange dreht, bis das Manometer diesen Druck anzeigt. Rechtsdrehungen belasten den Kolben, Linksdrehungen entlasten ihn.

Anmerkung. Man kann von einem Druckregulator nie die Function eines Absperr-Ventils verlangen, d. h. es hält derselbe nie absolut dicht und selbst abgestellt würde er allmählich den ganzen Kesseldruck durchlassen; er kann nur bei Verbrauch des seinem Durchgang nahezu entsprechenden Dampfquantums permanent die gewünschte Reduction herbeiführen und es ist daher überall, wo keine extra Absperr-Vorrichtung nach dem Kessel hin vorhanden ist, solche vor dem Reductions-Ventil auf Seite **D** an passender Stelle zu veranlassen.

Fürchtet man umgekehrt, dass der Kesseldruck einmal unter den Druck der erzielten Reduction kommt und so das Uebertreten von schädlichen Flüssigkeiten in den Apparat herbeiführt, z. B. Lauge bei Lumpenkochern, so empfiehlt sich auf Seite **C** die Zwischenschaltung eines Retour-Ventils.

Bei Bestellung ist ausser dem Durchgange des Regulators oder der Rohrleitung, in die er eingeschaltet werden soll, auch der gewünschte reducirte Druck und der Kesseldruck anzugeben, eventuell die Grenzen, in denen das Ventil arbeiten soll.

Dimensionen der Druckregulatoren und Preis-Verzeichniss.

Diameter der Durchgangsöffnung	$\frac{3}{4}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	4	5	6 Zoll Rhld.
do.	20	26	39	52	65	78	104	131	157 Millimeter.
Länge von Flantsch zu Flantsch	$3\frac{3}{4}$	$4\frac{1}{4}$	$4\frac{1}{2}$	$6\frac{7}{8}$	$9\frac{1}{4}$	11	13	14	16 Zoll Rhld.
do.	98	111	118	179	242	288	340	366	419 Millimeter.
Flantsch-Durchmesser	$3\frac{1}{2}$	4	$4\frac{1}{2}$	6	7	8	$9\frac{1}{4}$	11	$12\frac{1}{2}$ Zoll Rhld.
do.	91	104	118	157	180	209	242	288	327 Millimeter.
Preis	18	20	27	36	43	50	65	81	96 Thlr.

Patent-Manometer dazu, extra nach Preis-Courant.



Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.MANCHESTER,
Lower Kingstr. 23.GLASGOW,
Hopestr. 202.General-Depôt-PRAG, und
Elisabethstr. 655-1.WIEN,
Opernring 10.

Fig. 4.

Fig. 2.

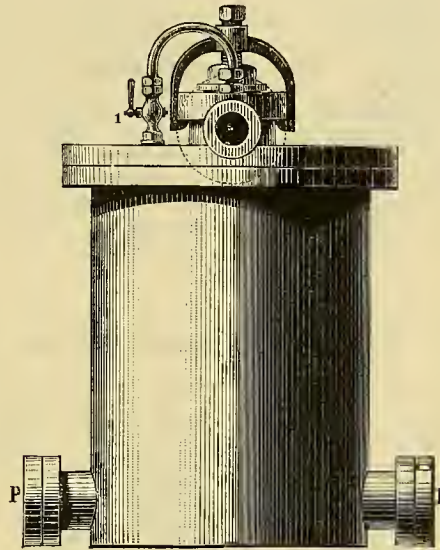
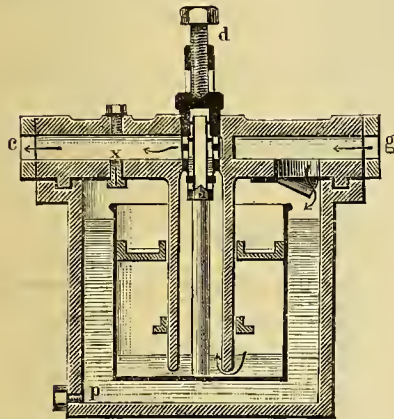
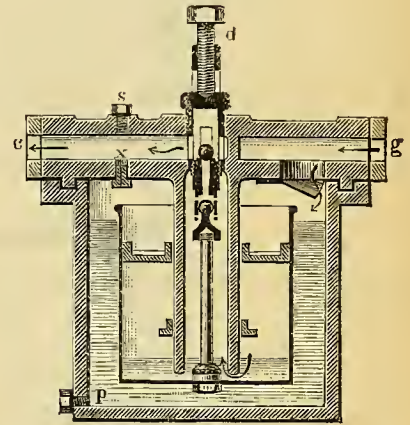
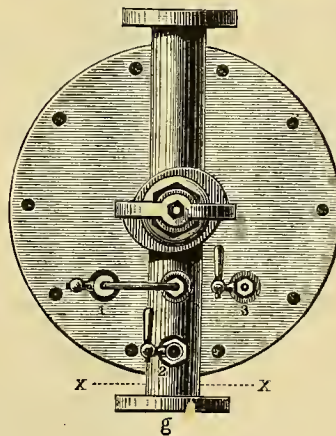


Fig. 3.

**Condensations-****Automat oder****Wasser-Ableiter,****Condensirtopf.**

Bei allen Dampf-, Heiz-, Koch- und Trockenapparaten kommt es zur Ersparung von Brennmaterial darauf an, dass das in denselben entstehende Condensations-Wasser ohne Dampf-Verlust abgeführt werde.

Genannte Zwecke werden durch unsere Condensirtöpfe vollständig erreicht. Sie sammeln alle condensirten Dämpfe aus Dampfrohren, Dampfsammlern, Scheidepfannen, Vacuum-Apparaten, Verdampf- und Koch-Apparaten und führen dasselbe bei entsprechend angebrachter Leitung nach Maassgabe des vorhandenen Dampfdrucks zu allen Punkten, wo man es wieder verwenden will, als etwa Vorwärmer, Retour'eau etc., wenn der Druck in denselben nicht grösser ist als der in den Topf eintretende.

Bezüglich des zu verhütenden Dampf-Verlustes bemerken wir gleich, dass man die dem warmen Condensationswasser, welches der Topf entlässt, entsteigenden Dämpfe, die eine ganz natürliche Folge der Temperaturdifferenzen sind, nicht mit Dampf verwechseln muss.

Die Töpfe werden in zwei verschiedenen Constructionen ausgeführt, entweder mit Doppelsitz-Ventil, wie in Fig. 2 und 4, oder mit Kugel-Ventil, wie in Fig. 3.

Die Construction mit Doppel-Ventil (oder entlastetem Ventil) bietet den Vorzug eines verhältnissmässig grossen Durchgangs, so dass sich diese Töpfe besser zur Abführung grösserer Quantitäten Condensationswasser eignen und vermöge ihrer Entlastung im Ventil mit höherem Dampfdruck zu arbeiten befähigt sind, als die mit Kugel-Ventil. Es eignen sich die Töpfe mit Kugel-Ventil vorzüglich bei Abführung kleiner Wasserquantitäten und sind die Kugel-Ventile dem Verschleiss fast gar nicht ausgesetzt. Wegen des Abreissens (Loslassens) des Ventils vom Sitz, sind diese Töpfe im Maximum nur bis 3 Atm. zu gebrauchen. Die Töpfe mit Doppelsitz-Ventil werden bis 4 Atm. für gewöhnlich adjustirt. Ist ausnahmsweise höherer Druck vorhanden, so muss das besonders in der Bestellung bemerkt werden.

Die Töpfe mit Doppelsitz-Ventil arbeiten in unmerklichen Absätzen, die mit Kugel-Ventil in ausgeprägteren Intervallen. Fig. 3 ist ausserdem gleich mit Retourkugel versehen. Bei den Töpfen mit Doppelsitz-Ventil, Fig. 2 und 4, dagegen muss solches nach Preisecourant Tafel VI, Fig. 8 extra bestellt werden, falls das Wasser vom Topf aus hochgedrückt werden soll.

verte!

Zur Erklärung der allgemeinen Einrichtung, die aus den Zeichnungen schon klar sein dürfte, diene Folgendes: Die Condensirtöpfe bestehen aus zwei Töpfen, einem äusseren aus Gusseisen, welcher oben dicht verschraubt ist, und einem innern aus Kupferblech, dem Schwimmtopf, welcher oben offen ist. Der Deckel enthält die Ein- und Ausgangscanäle und das senkrecht herabreichende Steigrohr dient dem Schwimmtopf als Führung. Die Ventile sind in den Deckel eingesetzt um solche leicht herausheben und reinigen zu können, und werden hier durch Bügel und Druckschraube **d** fixirt. Die Einrichtung des Topfes No. 4 ist im Allgemeinen analog der von Fig. 2, doch werden weiter unten einige Abweichungen vorgehoben werden, welche sehr zweckentsprechend von Herrn **Rassmus** in Magdeburg eingeführt wurden. Die Wirkungsweise ist kurz folgende: Wenn bei **g** Dampf und Condensationswasser eintritt, so sammelt sich dasselbe im Aussentopfe und der Schwimmtopf wird gehoben, schwimmt und schliesst das Ventil. Steigt das Wasser nun im Aussentopfe höher bis über den Rand des Schwimmtopfes, so stürzt es in diesen hinein und bringt ihn endlich zum Sinken und somit öffnet sich das Ventil. Der im Topf statthabende Dampfdruck treibt dann das Wasser aus dem Steigrohr durch das Ventil nach **C** ins Freie, worauf wieder Abschluss eintritt und so fort. Natürlich bleibt immer so viel Wasser im Schwimmtopf, dass die untere Mündung des Steigrohrs ganz abgeschlossen ist. Zur Entfernung der Luft ist bei Fig. 2 und 3 eine kleine Bohrung **x** angeordnet und darüber eine Schraube **s** um nach Entfernung derselben die Bohrung **x** gelegentlich reinigen zu können. **p** ist eine Ablassschraube. Diese Töpfe werden nun in fünf Grössen ausgeführt, jedoch mit Kugel-Ventil nur in einer, der kleinsten Grösse; die kleinsten Nummern, No. **d** und **e**, eignen sich für gewöhnliche Fälle, Dampfheizungen und kleinere Kochapparate. Der Flantschen-Anschluss ist hier oval. Die Ventile sind aus bestem Rothguss. Die Ausführung dieser Nummern ist einfach aber solide. Die Rohranschlüsse, sowie die Maximalleistungen sind unten tabellarisch zusammengestellt.

Die Töpfe No. **a b c** sind äusserst solide ausgeführt und verweisen wir gleichfalls bezüglich der Leistung, Flantschanschlüsse, Rohrweiten etc. auf untenstehende Tabelle. Bezüglich der Ausführung ist noch hervorzuheben, dass diese grösseren Nummern für sehr bedeutende Quantitäten Condensationswasser genügen und daher für Zuckerfabriken, Brennereien etc. von grossem Nutzen sind, zumal sie befähigt sind, auch da wirksame Dienste zu leisten, wo plötzlich und namentlich beim Anstellen grosse Quantitäten Luft verdrängt werden. Zu diesem Zweck ist der Topf armirt, wie namentlich Grundriss des Deckels verdeutlicht, mit einem Luft- (Nothhahn) oder Probihahn No. 3, dieser Hahn muss bei normalem Gange geöffnet Dampf geben; mit einem Lufthahn No. 1 nebst Uebersteigrohr, um vom Topf aus die Luft durch den Ausgangscanal abzuführen, dieser Hahn ist in vielen Fällen ganz offen zu lassen um continuirbaren Luftabzug zu bewirken; endlich mit dem Probihahn No. 2, welcher bei normalem Gange des Topfs geöffnet Wasser geben muss, also zur Controle dient.

Statt der kleinen Reinigungsschraube ist bei **P** ein grosser Putzkanal angeordnet. Die Ventile sind vom besten Rothguss und zum Herausheben derselben ist ein gabelförmiger Keil beigegeben. Der Flantschanschluss ist rund. Der Druckbügel Schmiedeeisen. Die Führungsteege der Schwimmtöpfe sind von Metall.

Dimensionen, Leistung und Preis-Verzeichniss.

№	Diameter der Doppel-Sitz-Ventile.		Flantsch-Diameter der Anschlüsse.		Zweckmässiger Durchmesser der Rohr-Anschlüsse.		Ausreichend zu Condensationsoberfläche von circa		Ar- beitet bis Atmos.	Erfordern Retourventile von Diameter		Preis		
	Zoll rhld.	Millim.	Zoll rhld.	Millim.	Zoll rhld.	Millim.	□ Fuss.	□ Meter.		Zoll.	Millim.	des Retour- Ventils.	des Topfes.	
Fig. 4	„ a	2	52	6	157	2	52	1000	100	4	2	52	9 $\frac{1}{3}$ Thlr.	70 Thlr.
	„ b	1 $\frac{1}{2}$	39	4 $\frac{1}{2}$	118	1 $\frac{1}{2}$	39	700	70	4	1 $\frac{1}{2}$	39	6 $\frac{2}{3}$ „	55 „
	„ c	1 $\frac{1}{4}$	33	4 $\frac{1}{4}$	111	1 $\frac{1}{4}$	33	500	50	4	1 $\frac{1}{4}$	33	5 $\frac{1}{6}$ „	40 „
Fig. 2	„ d	1 $\frac{3}{8}$	29			1	29	300	30	4	1 $\frac{1}{4}$	33	5 $\frac{1}{6}$ „	22 „
Fig. 3	„ e	mit Kugel- Ventil, $\frac{3}{8}$ “ Bohrung.	9	} oval		$\frac{3}{4}$	20	150	15	3	Am Ventil selbst vor- handen.			22 „

Wenn die Töpfe bei höherm Dampfdruck, als umseitig angegeben, arbeiten sollen, muss das besonders vereinbart werden.

Notiz zur Montirung dieses Apparates.

Der Apparat kann an einem beliebigen Orte, bis auf das Anschrauben der Eingangs- und Ausgangsrohre, vollständig betriebsfähig zusammengestellt werden. Oben, neben und hinter den Apparaten, mit welchem die Condensationstöpfe verbunden werden sollen, ist selten ausreichend Platz und Licht, um das Zusammenstellen ohne Schwierigkeiten vornehmen zu können.

Für den Transport ist der Apparat hier mit Stroh und Leisten pp. so verpackt, dass die inneren Theile fest in dem Aussentopfe stehen, mithin durch Stösse nicht verdorben werden können. Diese Verpackung muss nun zuerst entfernt werden und der Topf sammt Ventil ist dann ordentlich mit reinem Wasser auszuspülen, die Luftöffnung aber mit einer Nadel zu durchfahren.

Behufs Auseinandernehmen löst man zuerst die Schraube des Bügels **d** oben und entfernt diesen, lockert darauf das mit Conus eingesetzte Ventilgehäuse und hebt es sammt dem Ventil und der daran befindlichen Stange heraus. Alsdann entfernt man den Deckel und nimmt das Verpackungsmaterial heraus, setzt darauf den Schwimmtopf ein und schraubt den Deckel mit Gummidichtung auf. Dann setzt man wieder das Ventilgehäuse mit dem Ventil ein und zieht es mittelst der erwähnten Schraube **d** fest.

Die oben erwähnte Bohrung am Steigrohre zur Entfernung der Luft muss überhaupt zuweilen mit einem Draht gereinigt werden. Die ganze Construction ist neben sicherem Functioniren darauf angelegt, dass man leicht an die Ventile gelangen, diese nachsehen und reinigen kann.

Schliesslich bemerken wir noch, dass beim Anbringen an Dampfleitungen immer wohl darauf zu achten ist, welche Seite mit dem Rohrsystem, aus dem das Wasser entfernt werden soll, verbunden werden muss; auf dem Eingang ist zu diesem Berufe ein Pfeil angegossen, welcher die Richtung markirt. Ausserdem dürfte bemerkt werden, dass die Condensationstöpfe immer an den tiefsten Punkten der Rohrleitungen anzubringen sind.

Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
Lower Kingstr. 23. Hohestr. 202. Elisabethstr. 653-1. Opernring 10.

Fig. 1.

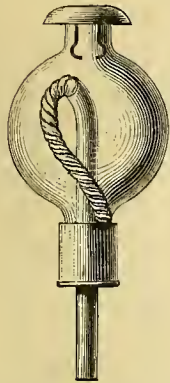


Fig. 5.

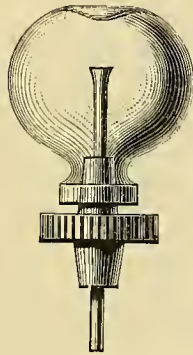


Fig. 3.

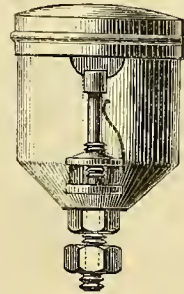


Fig. 4.

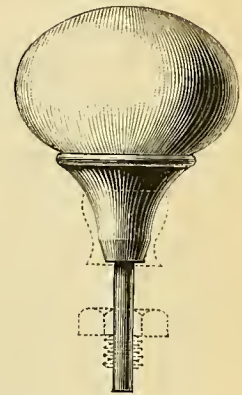


Fig. 2.



Fig. 6.

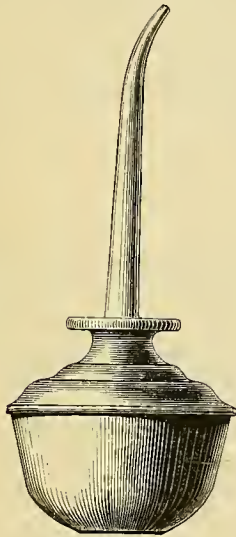


Fig. 7.

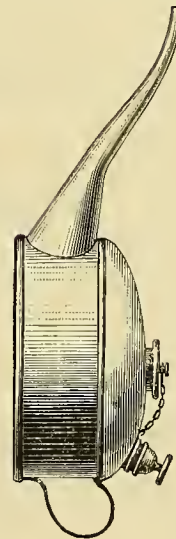


Fig. 9.

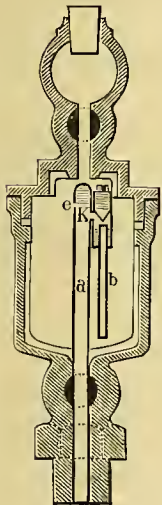


Fig. 8.

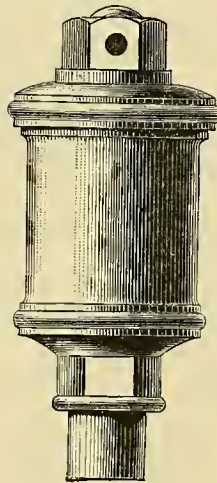


Fig. 10.

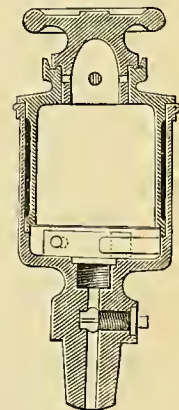


Fig. 11.

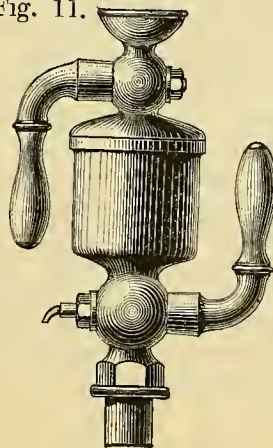


Fig. 12.

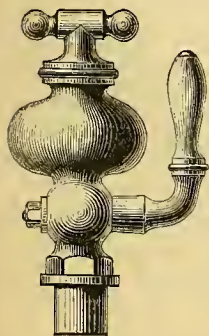


Fig. 14.

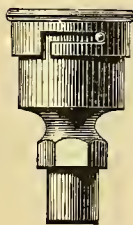
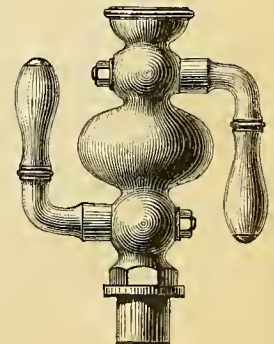


Fig. 15.



Fig. 13.



Schmier-Vorrichtungen

für Wellen, Getriebe, Bläuel-Stangen, Dampf-Cylinder. Schmierhähne, Schmiergefäss für Dreher etc.

spannung das Oel bei jedem Hub durch seine Ausflussöffnung gedrängt wird. Damit die Condensation des Dampfes in der Dose eine möglichst geringe sei, ist der Raum zwischen den beiden Wandungen mit Asehe oder Papier gefüllt und der Boden durch Dampf geheizt. Bei stehenden Schiebern leitet man das Oel durch eine kleine Rinne bis auf die Schieberfläche. Da wo während des Ganges der Maschine die Büchse gefüllt werden soll, wie z. B. bei Schiffsmaschinen, nimmt man eine Dose mit Doppelhahn. Ein Verstopfen der Büchse durch unreines Oel kann nicht vorkommen, da das ganze Oelquantum dicht über dem Boden ausgetrieben wird und sich so kein Bodensatz bilden kann. Ausserdem wird das Röhrchen *b* bei jedem Hub durch den in die Büchse eintretenden Dampf gereinigt, das Oel in der Büchse aufgewühlt und so die etwaigen Unreinigkeiten fortwährend mit dem Oel ausgetrieben.

Diameter der Oelvase $\left\{ \begin{array}{l} 2\frac{1}{6} \text{ Zoll rhd.} \\ 54 \text{ Millimeter.} \end{array} \right.$
Preis ganz in Metall | **Thlr.**

Fig. 10. Patent-Schmierbüchse von Anschütz, für Dampfeylinder. Das Princip der Schmierbüchse beruht darauf, dass die Wirkung der Druckdifferenz bei dem wechselnden Spiele des Kolbens und Schieberes die Bewegung einer Bourdonspirale (Schinzsehen Röhre) veranlasst und diese zur Bewegung eines kleinen Kolbens benutzt wird, welcher continuirlich pumpend, für die Abgabe des Oeles nach dem Cylinder hin sorgt, sobald die Maschine mit oder ohne Dampf in Bewegung ist. Das Princip ist durchaus neu und die Schmierbüchse, für steife und flüssige Schmiere geeignet, ihrer Sparsamkeit und Zweckmässigkeit halber, namentlich für Locomotiven, sehr zu empfehlen.

Diameter der Oelvase $\left\{ \begin{array}{l} 2\frac{1}{2} \text{ Zoll rhd.} \\ 65 \text{ Millimeter.} \end{array} \right.$
Preis ganz in Metall | **Thlr.**

Fig. 11. Schmierhahn nach Jacobi mit doppeltem Kükem, eins oben unter der Füllschaale, eines unten zur Absperrung. Am unteren Kükem ist eine derartige Bohrung angebracht, welche gestattet, das Condensationswasser zuweilen abzuspritzen. Das Princip des Schmierhahns ist einfach das, dass durch Bildung des Condensationswassers stets ein ziemlich constantes Oel-Niveau erhalten wird und durch das im Innern hochgeführte Schmierrohr continuirliche Schmierung erfolgt, so lange der untere Hahn offen ist.

Grössen der Ausführung.

	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.
Diameter der Oel-Vase	1½	39	2	52	2½	65	2¾	72	3	78	5	131
Zapfenlänge	¾	20	1	26	1	26	1⅞	29	1⅞	29	1¾	46
Zapfendurchmesser	¾	20	1⅞	29	1⅞	29	1⅞	29	1⅞	29	1⅞	42
Preis	5		7		8½		10		12		25 Thlr.	

Fig. 12. Schmierhähne mit einfachem Kükem und Deckel-Verschraubung.

	Zoll	Millim.	Zoll	Millim.	Zoll	Millim.	Zoll	Millim.
Durchmesser der Vase	1¼	33	1½	39	1¾	46	2	52
Diameter des Zapfens	⅝	16	⅞	15	1⅞	18	1⅞	18
Länge des Zapfens	¾	20	1⅞	18	1¾	31	¾	20
Preis	2		2½		2¾		3½ Thlr.	

Fig. 13. Schmierhähne mit Doppelkükem.

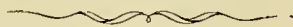
	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.
Diameter der Oel-Vase	1	26	1½	39	1¾	46	2	52	2½	65	3	78
Zapfenlänge	⅝	16	¾	20	¾	20	⅞	23	1⅞	29	1⅞	34
Zapfendurchmesser	½	13	⅝	16	1⅞	18	⅞	23	1	26	1¾	31
Preis	3		4		5		6		7½		9½ Thlr.	

Fig. 14. Cylinder-Schmierbüchsen mit Bajonett-Verschluss am Deckel, Abfliegen des Deckels bindernd.

	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.
Diameter der Oel-Vase	1¾	46	1⅞	42	1¼	33	1	26	⅞	23	⅝	16
Tiefe derselben	1⅞	42	1¾	46	1¼	33	1	26	¾	20	⅝	16
Zapfenlänge	⅞	23	¾	20	⅝	16	1⅞	15	½	13	½	13
Zapfendurchmesser	¾	20	¾	20	⅝	16	⅝	16	½	13	1⅞	12
Preis	1⅞		1⅞		1		⅝		⅞		½ Thlr.	

Fig. 15. **Cylinder-Schmierbüchsen** mit Schlitz und Schraube im Deckel, wodurch ein Abfliegen des Deckels sicher vermieden wird und durch kurze Drehung die zum Eingiessen des Oels im Deckel befindliche Oeffnung frei gemacht werden kann.

	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.	Zoll	Millm.
Diameter der Oel-Vase	$1\frac{3}{4}$	46	$1\frac{5}{8}$	42	$1\frac{1}{4}$	33	1	26	$\frac{7}{8}$	23	$\frac{5}{8}$	16
Tiefe derselben	$1\frac{5}{8}$	42	$1\frac{3}{4}$	46	$1\frac{1}{4}$	33	1	26	$\frac{3}{4}$	20	$\frac{5}{8}$	16
Zapfenlänge	$\frac{5}{8}$	16	$\frac{5}{8}$	16	$\frac{5}{8}$	16	$\frac{1}{2}$	13	$\frac{1}{2}$	13	$\frac{1}{2}$	13
Zapfendurchmesser	$\frac{1}{2}$	13	$\frac{1}{2}$	13	$\frac{1}{2}$	13	$\frac{1}{2}$	13	$\frac{1}{2}$	13	$\frac{3}{8}$	9
Preis	$1\frac{5}{8}$		$1\frac{1}{8}$		1		$\frac{5}{8}$		$\frac{2}{8}$		$\frac{1}{2}$ Thr.	



Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Operaring 10.

Fig. 1.

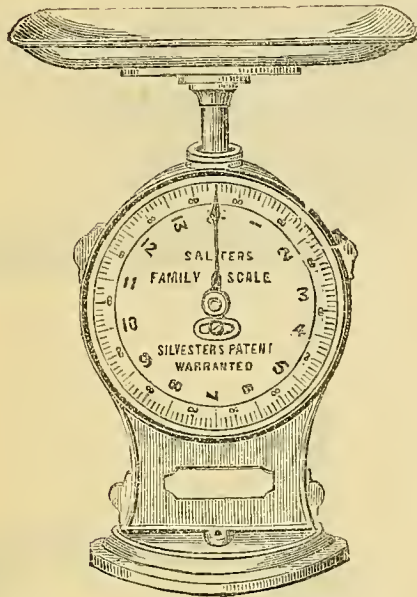
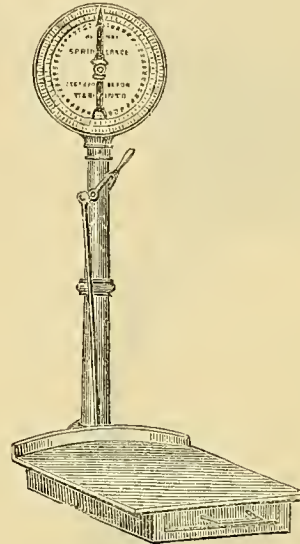


Fig. 2.



Salter's Federwaagen zum Abwägen.

Diese Waagen sind vorzüglich zum Privat- und Hausgebrauch geeignet und empfehlen sich durch die Schnelligkeit, mit der man zum Resultat gelangt ohne erst Gewichte auflegen zu müssen, sehr. Die Genauigkeit ist sehr zuverlässig.

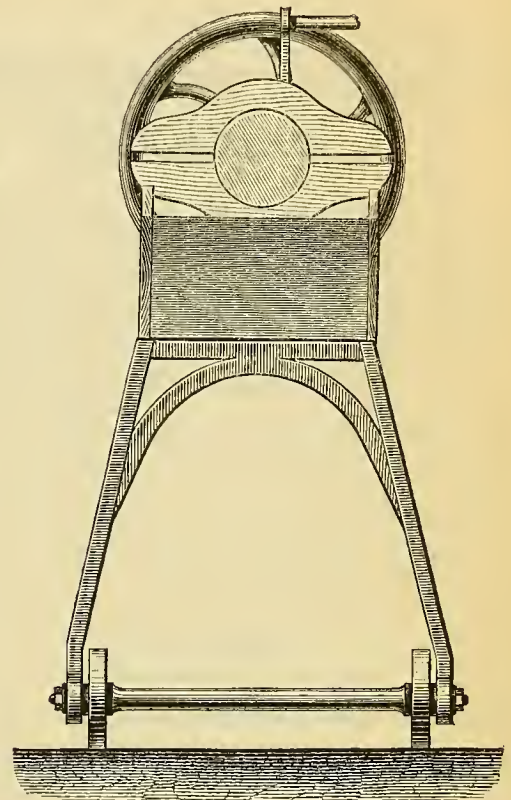
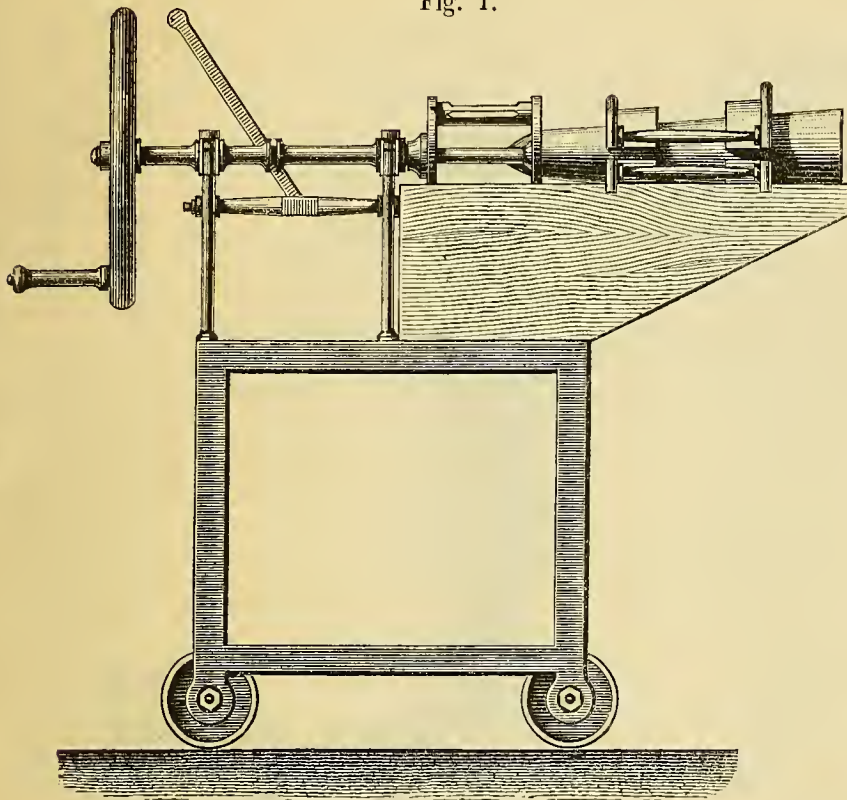
Fig. 1. Familienwaage,

abzuwiegen	14 Pfd.	mit 5" runder Scala	und 9" runder oder ovaler Schaale	10" und 7"	Preis	4½ Thlr.
"	28	" " do.	" " " 10"	" " " "	11" und 8"	6 " "
"	25	" " 7¾"	" " " 11"	" " " "	12" und 9"	7½ " "
"	50	" " do.	" " " 12"	" " " "	13" und 9½"	8½ " "

Fig. 2. Plattformwaage,

abzuwiegen	3 Ctr.	mit 24" und 20" Plattform	— mit Rückwand	Preis	42 Thlr., ohne Rückwand	Preis	38 Thlr.
"	5	" " 28" " 24"	" " " "	50	" " " "	45	" "
				Wenn auf Räder gestellt extra	4 Thlr.		

Fig. 1.



Zuckerbrod-Kopf- und Boden-Fraiser.

Der **Kopf-Fraiser** dient zum Anspitzen der Zuckerbrode, der **Boden-Fraiser** zum Plattiren (Abdrehen) des Bodens derselben.

Die Construction des Apparates ist für beide Zwecke gleich, nur wird beim Boden-Fraiser an Stelle des beim Kopf-Fraiser zum Anspitzen der Brode dienenden „Messerkorb“ (siehe obige Zeichnung) eine „Messerplatte“ eingesetzt. Messerkorb oder Messerplatte werden durch Handbetrieb gedreht und dabei mit Hülfe eines seitlichen Hebels langsam gegen das Zuckerbrod vorbewegt. Das Brod liegt zwischen zwei Holzbacken eingeklemmt, fest und horizontal, so dass beim Kopf-Fraiser ein centrishes Anspitzen und beim Boden-Fraiser ein verticales Abdrehen des Bodens erzielt wird.

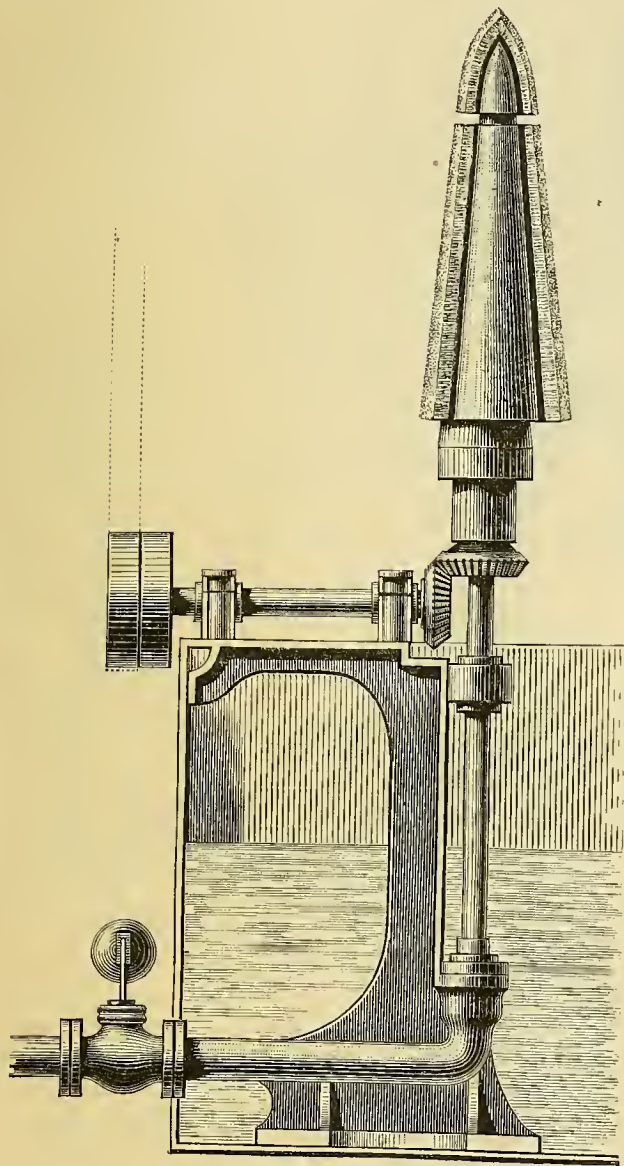
Ein die Handhabung und den Transport erleichterndes, auf Rollen laufendes Eiseugestell, sowie ein zum Auffangen des abgefraisten Zuckers dienender und unter dem Zuckerbrod anzubringender Holzkasten, welche beide Gegenstände obige Zeichnung mit veranschaulicht, werden dem Apparat auf Bestellung beigeliefert, jedoch extra berechnet. Wir liefern den Apparat complett mit den beiden, nach Bedarf auszuwechselnden Einsätzen, dem Kopf- und Boden-Fraiser. Für grössere Fabriken ist jedoch zweckmässig befunden, zwei Apparate zu beschaffen, von denen der eine mit dem „Messerkorb“ und der andere mit der „Messerplatte“ armirt ist.

Preis des Kopf-Fraiser	46 Thlr.
„ „ Boden-Fraiser	40 „
„ „ Eisengestells mit Rollen und Schwungrad	40 „
„ „ Holzgestells nebst Führung für das Zuckerbrod	12 „

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Fig. 2.



Zucker-Formen-Wasch-Maschine.

Diese sehr zweckmässige Vorrichtung ersetzt die Zeit raubende, noch in vielen Fabriken angewandte Handreinigung der gebrauchten Zuckerformen auf die vortheilhafteste Weise; auch macht sie das sonst übliche längere Einweichen der Zuckerformen unnöthig.

Durch eine Riemscheibe von der Transmission aus in Bewegung gesetzt, dreht sich ein Bürsten-Conus, auf welchem je nach Grösse und Form der zu reinigenden Zuckerform die entsprechende Bürste aufzustecken ist. Dieser Conus ist hohl und steht mit einer Röhre in Verbindung, die man zur Wasserleitung führt. So lange die Maschine ausser Function bleiben soll, sperrt ein Ventil das Wasser ab. Beim Niederdrücken des Ventilhebels jedoch (es geschieht dieses mit dem Fusse) dringt das Wasser hoch und in den Conus, spritzt am oberen Theil desselben heraus, läuft dann an der Bürste herunter und bewirkt nun, in Verbindung mit der sich drehenden Bürste, in wenigen Secunden ein gründliches Reinigen der Zuckerformen, welche über den Bürsten-Conus gestülpt gehalten wird.

Den untern Theil der Maschine stellt man in einen Kasten, welcher zum Auffangen des verbrauchten event. süssen Wassers dient, und wie solcher in nebenstehender Zeichnung mit veranschaulicht ist.

Preis 150 Thlr.

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

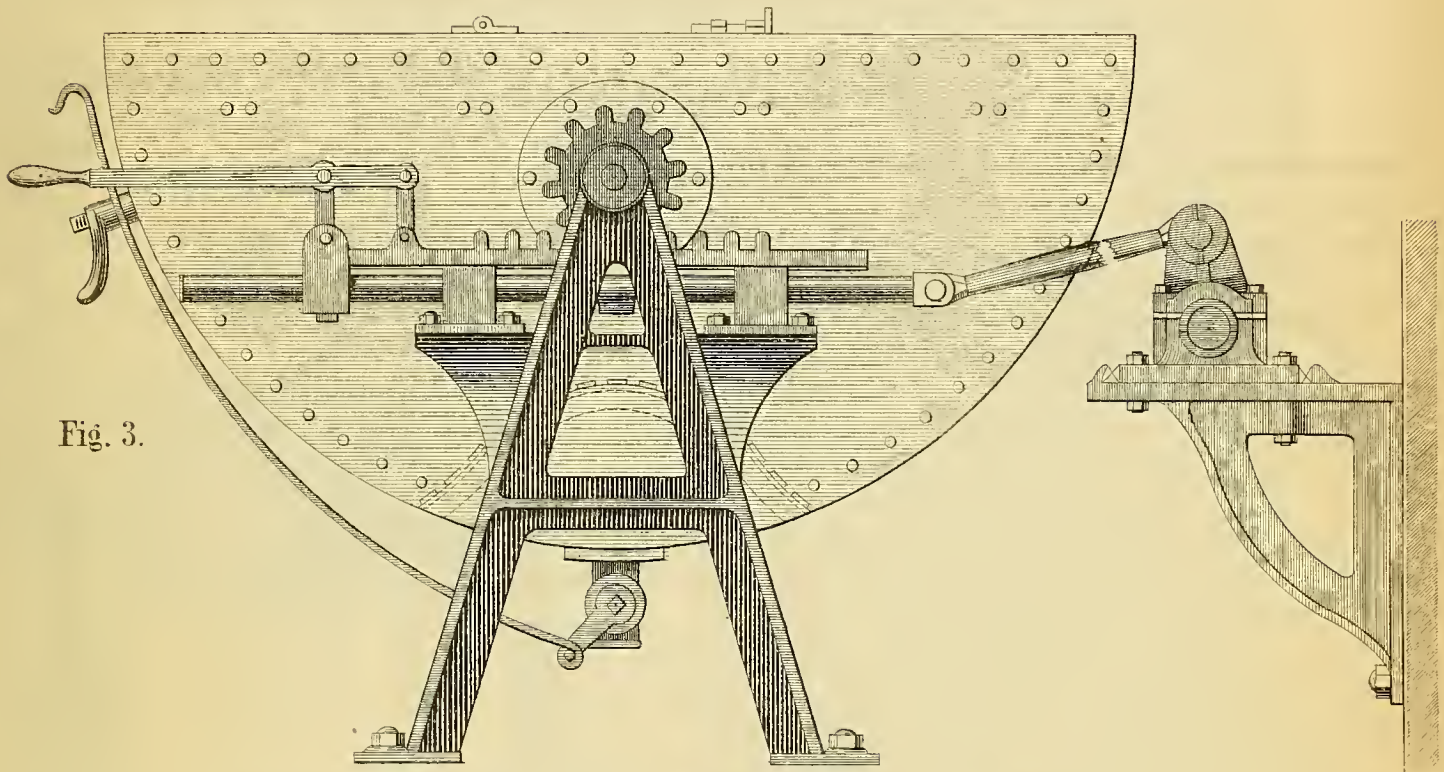


Fig. 3.

Presstücher-Waschmaschine.

Vorstehende Waschmaschine eignet sich besonders zur Tücherwäsche in Zuckerfabriken, die mit Pressen arbeiten. Zu ihrer Bedienung gebraucht sie einen Arbeiter und liefert in der Schicht 1500 bis 2000 Stück Presstücher rein gewaschen und gespült.

Die Vorzüge dieser Maschine vor andern gebräuchlichen Waschvorrichtungen sind folgende:

Stets zuverlässig und gleichmässig reine Wäsche, Lockerung der Tücher bei Vermeidung jeder Abnutzung derselben. Leichte, reinliche und billige Bedienung, Ersparniss an Presszeug aus Obigem resultirend.

Da diese Maschine die Tücher rein herstellt ohne dieselben abzunutzen oder zu verfilzen, so liegt der grösste Vortheil, welchen dieselbe bietet, in der vollkommenen und leichten Pressarbeit.

Vorstehende Skizze zeigt die Anordnung der Wäsche, betrieben durch eine Welle, welche auf Consolen an einer Mauer gelagert ist und die durch Riemscheiben oder Räder ihre Umdrehungen empfängt. Die Maschine wird auf einem Eisengerüst montirt und mit Vorgelege versehen gefertigt und kann dann von irgend einer vorhandenen Welle aus durch Riemenbetrieb bewegt werden.

Als dritte Ausführung liefern auch diese Maschine in gleicher Art montirt und in directer Verbindung mit einer kleinen Dampfmaschine, die auf demselben Gestell gelagert ist, auf Wunsch auch mit hohlem gusseisernen Zapfen zur Einführung des Wassers resp. des Dampfes in das Waschgefäss.

Die Bedienung dieser Maschine zerfällt in die Arbeit des Füllens (von 25 bis 30 Stück Presstücher grösster Dimension), des Zulassens von warmem (ca. 40° Réaum.) Wasser bis zur Höhe des Zapfens, Schliessen des Deckels und Einrücken der Maschine. Das Schankeln, welches mit einer Geschwindigkeit von 14 bis 15 Doppelschwingungen pro Minute erfolgen muss, genügt mit 2 Minuten, um das Wasser vollständig mit der Unreinigkeit der Tücher zu sättigen.

Hierauf ist die Maschine anzuhalten, durch Oeffnen des Abflussbahns vom Wasser, welches dunkel gefärbt ist, zu entleeren, darauf nochmals mit warmem Wasser zu füllen und 2 Minuten lang in Bewegung zu setzen. Nach dieser zweiten Wäsche läuft das Wasser nur noch grau gefärbt ab. Empfehlenswerth ist es, nach der Wäsche die Tücher in ein Gefäss mit kaltem Wasser zu werfen und aus diesem durch eine Wringmaschine gehen zu lassen, um dieselben von den letzten Spuren des grau gefärbten Wassers zu befreien und sie gleichzeitig zu trocknen.

Preis-Verzeichniss.

Waschmaschine mit Garnitur incl. Pleulstange und Kurbel	Thlr. 175.
Dieselbe mit Vorgelege und Riemscheibe	„ 300.
Dieselbe mit directer Verbindung einer kleinen Dampfmaschine und mit hohlem Zapfen am Waschbehälter zur Einführung von Wasser und Dampf complett	„ 440.
Wringmaschine, bestehend aus einer gedrehten Eisenwalze von 6" Dmtr., 24" Länge und einer desgl. Gummiwalze, mit Eisengestell complett (unter Garantie der Haltbarkeit der Gummiwalze)	„ 110.

Knochenkohlen-Wiederbelebungs-Apparat

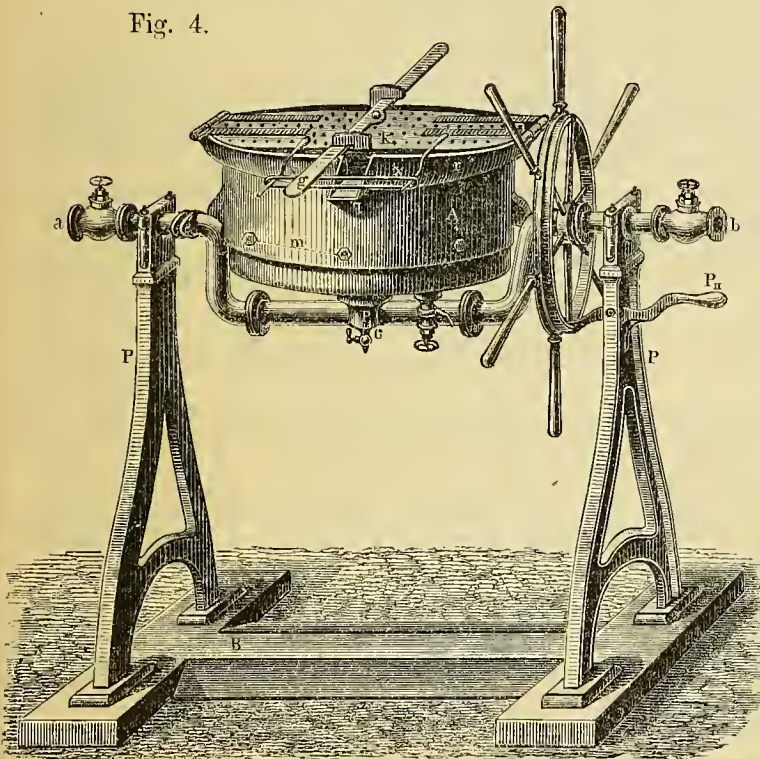
zum

Waschen, Kochen, Dämpfen, Sodiren und Einsäuern der Knochenkohle

von

O. Baumann.

Fig. 4.



Der Apparat, Fig. 4, besteht aus einem cylindrischen Gefäss A, dem Koch- oder Waschgefäss, um dessen obern Rand eine Rinne r mit Ausguss q läuft. Vom Boden her erhebt sich ein unterhalb mit vier Oeffnungen versehenes Steigerrohr (das Circularrohr), welches durch einen Holzpfropfen verschliessbar ist. Bei m ist ein Doppelsiebboden (vergleiche Durchschnitt 4a.) eingelegt, der am Umfange durch 6 Stück conisch zugespitzte Schrauben festgehalten wird. Oberhalb ist das Gefäss A durch einen in der Mitte aufklappbaren Doppelsiebbodendeckel k verschliessbar. Der Schluss wird durch einen unter 2 Knaggenhaken schlagenden Schlusriegel g erzielt. Unterhalb bei C schliessen sich gekrümmte Rohre an, die mit ihren Enden in den auf einer Grundplatte B aufgeschraubten Bockgestellen PP gelagert und hier durch Stopfbüchsen abgedichtet sind. Bei p unten ist eine Erweiterung und Trennung, der einerseits bei a Dampf, andererseits bei b Wasser zuführenden Rohre vorgenommen und für den Dampfaustritt eine Düse eingesetzt. Das Gefäss A ist an diesen gekrümmten Rohren befestigt und aufgehängt, derart, dass es durch ein an der Seite auf dem Zuführungsrohre befestigtes Handrad mit sechs Speichen als Handhaben

um die Enden der erwähnten Rohre als Axen leicht drehbar ist, leicht deshalb, weil die Anhängung möglichst im Schwerpunkt der Masse vorgenommen ist.

In zwei Stellungen, d. h. einmal in der, wie sie die Zeichnung angiebt, und einmal in der entgegengesetzten mit Deckel unterwärts, kann der Apparat durch den, in dazu angebrachte Einschnitte des Handrades fallenden Klinkhebel p fixirt werden.

Es leuchtet nun ein, dass, wenn man bei a Wasser und bei b Dampf giebt, letzterer sich unter dem Doppelsiebboden m verbreitet, wenn das Circularrohr geschlossen ist, und durch den in der Mitte aufsteigenden Dampfstrahl zur Circulation gebracht wird, wenn dies nicht der Fall ist.

Um den Anprall der Siebböden-Deckel k (beim Oeffnen) gegen die Böcke PP zu mildern, sind die Gummizüge x x angeordnet.

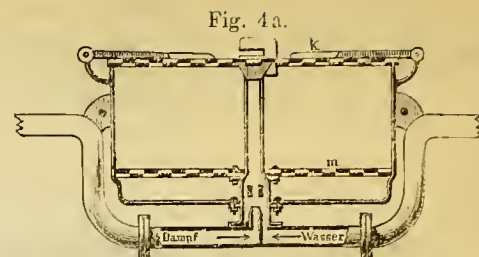
Manipulation und Anwendung.

Die Manipulation zerfällt je nach Behandlung der Knochenkohle in zwei Operationen:

- 1) in das Kochen und Dämpfen derselben,
- 2) in das Behandeln derselben mit Soda, caustischem Natron und Salzsäure.

I. Das Kochen und Ausdämpfen der Knochenkohle.

Das Circulirrohr wird durch die Kappe hierbei verschlossen, nachdem der Siebbodendeckel *k* geöffnet ist und die Knochenkohle wird in dem Behälter *A* bis 1" vom Rande aufgeschüttet und der Doppelsiebodendeckel geschlossen. Darauf wird der Wasserhahn *b* zuerst und dann das Dampf-Ventil *a* geöffnet. Sobald das Wasser über den Rand des Gefässes *A* in die Auffangerinne *r* überläuft, regulirt man den Dampf- und Wasserzutritt so, dass das Wasser möglichst heiss abläuft. Durch abwechselndes Öffnen und Schliessen des Wasserhahnes kann man nach Belieben Stösse zum Abschwenmen des feinen Knochenkohlenstaubes hervorbringen; je länger die Operation dauert, je reiner fliesst das Wasser ab und kann man durch genügend fortgesetztes Kochen die vollständige Wiederbelebung der Knochenkohle erzielen, wodurch die Knochenkohlen-Glühöfen entbehrlich werden. In der Regel kann man die Operation in 15 Minuten beendigen.



Kocht man mit dem Ammoniak enthaltenden condensirten Wasser des zweiten Körpers von Double-effet Abdampf Apparate aus, so kann man auch dadurch den von den Eiweiskörpern in der Knochenkohle herrührenden Gyps vollständig entfernen. Nach dem Auskochen mit Wasser wird der Wasserzutritt abgesperrt, der Apparat umgedreht, so dass der Doppelsiebodendeckel *k* nach unten gekehrt ist und die Kohle von oben nach unten durch Dampf gut ausgedämpft, bis reiner Dampf ohne Wasser austritt. Hierauf wird ein Korb untergeschoben, der Deckel *k* geöffnet und die Kohle in dem untergeschobenen Korbe aufgefangen, das entleerte Kochgefäss aber für eine zweite Quantität Kohle wieder bereit gemacht und aufgerichtet etc. etc.

Man kann auch in zweckmässiger Weise zwischen den Böcken unter dem Apparat eine Platte mit Seitenrand anordnen, die um die Mittaxe drehbar, einerseits in schräge Lage gebracht das aus der Rinne *r* ablaufende Wasser abführt, andererseits in die entgegengesetzte schräge Lage gebracht die Knochenkohle aufnimmt und diese gleich auf der schiefen Ebene gleitend abführt. In diesem Falle und mit dieser Einrichtung würde es sich empfehlen, die Apparate gleich über den Filtern aufzustellen.

II. Behandlung der Knochenkohle mit Soda, caustischem Natron und Salzsäure.

Durch diese Operation erspart man sich die Gährung und das Glühen der Knochenkohle.

Man entfernt bei dieser Operation den Holzpfropfen *n* von dem Circulirrohr, nachdem man denselben vorläufig bei der Füllung des Behälters *A* mit Kohle bis 1" vom Rande daraufgelassen hat, um zu verhüten, dass Kohle in das Rohr hineinfällt und setzt den Circulirteller auf. Der Siebbodendeckel *k* wird darauf geschlossen, der Dampf- und Wasserhahn geöffnet und letzterer so lange, bis das Wasser die Kohle oben bedeckt. Hierauf schliesst man den Wasserhahn ganz und öffnet den Dampfzutritt so weit, dass das Wasser nicht zum Circulirrohr herausspritzt, sondern nur ruhig und beständig oben überströmt, überläuft und sich über die Kohle verbreitet.

- a) Hat man die Kohle nach dem Gebrauche in den Filtern noch nicht gesäuert, so setzt man, sobald man den Behälter *A* mit Wasser gefüllt hat, das nöthige Quantum Salzsäure, mit Wasser verdünnt, hinzu, die Hälfte davon in das Circulirrohr giessend, die Hälfte in den Behälter auf die Kohle, in dem Momente, wo das Circuliren beginnen will.
- b) Alsdann stecke man nach dem Circuliren mit Salzsäure die Kappe oder den Holzstöpsel *n* auf, schliesse den Deckel *k* und öffne den Wasserhahn, damit ein Auskochen der ganzen Masse eintritt. Um schneller zu arbeiten, kann man vorher den Kessel umwenden und das saure Wasser mit Dampf abdrücken.
- c) Ist der gebildete salzsaure Kalk ziemlich vollständig ausgewaschen, was ca. $\frac{1}{4}$ Stunde dauert, so kehrt man nach Schluss des Wasserhahnes den Bottich *A* um und dämpft kurze Zeit von oben nach unten aus; alsdann richtet man den Kessel wieder auf, füllt ihn auf's Neue unter Dampfzuführung mit Wasser und setzt,
- d) vor dem Circuliren bei abgenommener Kappe oder Holzpfropfen, eine Lösung von Soda oder caustischem Natron hinzu. Die Soda wird in 2—5 Minuten in schwefelsaures Natron verwandelt, während der Gyps in der Kohle sich in kohlensauern Kalk umlegt, das caustische Natron aber löst die absorbirten organischen Stoffe auf.
- e) Nach vollendetem Circuliren setzt man wieder die Kappe *n* auf und kocht mit Wasser und Dampf circa 15 Minuten aus, wodurch das gebildete schwefelsaure Natron und das caustische Natron mit den aufgelösten organischen Stoffen vollständig ausgelaugt wird. Auch hier kann man vorher, um schneller zu arbeiten, den Kessel nach dem Circuliren mit Soda und Natron umwenden und die Lauge vor dem Auskochen mit Wasser mit Dampf abdrücken.
- f) Hierauf verfährt man ganz wie ad a angegeben.
- g) Endlich schliesst man den Wasserhahn, kehrt den Apparat um, treibt Dampf von oben nach unten durch und besorgt die Entleerungen wie sub I. angegeben wurde.

Die Zeitdauer dieser Operation stellt sich wie folgt:

- | | |
|--|--------|
| 1) Säuern — 5 Minuten | 5 Min. |
| 2) Auskochen der Säure — 15 Minuten | 15 „ |
| 3) Sodiren — 5 Minuten | 5 „ |
| 4) Auskochen der Natronlösung — 15 Minuten | 15 „ |
| 5) Zweites Säuern — 5 Minuten | 5 „ |
| 6) Drittes Auskochen, Dämpfen und Entleeren — 15 M. 15 „ | 15 „ |

Summa 1 Stunde.

Rechnet man durchschnittlich auf 100 Ctr. Rüben 15% Knochenkohle, so werden bei Verarbeitung von 1000 Ctr. Rüben per Tag 4 Apparate der kleinsten Sorte genügen, um die Knochenkohle mit Soda und caustischem Natron wieder zu beleben, falls man genug reines Wasser zur Disposition hat, und 2 Apparate der grössten Sorte würden genügen, um täglich ca. 300 Ctr. Knochenkohle wieder zu beleben.

Der Apparat wird in 3 Grössen, No. I, II, und III ausgeführt.

№	Mit Kochgefäss von Zoll Millim. Diameter.		F a s s t	Kocht und dämpft in 24 Stunden	Säuert, sodirt, kocht und dämpft in 24 Stunden	P r e i s.
I	19	497	ca. 150 Pf. Kohle.	90—100 Ctr. Kohle.	30—33 Ctr. Kohle.	150 Thlr.
II	22	576	„ 200 „ „	120—133 „ „	40—45 „ „	220 „
III	36	941	„ 450 „ „	270—300 „ „	90—100 „ „	300 „

Die Gefässtiefe beträgt bei allen 3 Nummern 12" = 314 Mm.

Anmerkung. Wir machen noch auf die folgenden Atteste aufmerksam und bemerken, dass nach erfolgter definitiver Bestellung genaue Recepte über Anwendung und Zusatz der Chemikalien gegeben werden!

Herrn Civil-Ingenieur **Otto Baumann**. Cöthen.

Nachdem ich in der verflossenen Campagne mit Ihrem Knochenkohlen-Wiederbelebungs-Apparate gearbeitet habe, bestätige ich Ihnen hierdurch gern, dass derselbe meinen Anforderungen vollständig entsprochen hat.

Der Apparat lieferte mir eine gute arbeitende Kohle und schaffte mir in 20 Arbeitstunden die in 24 Stunden benötigten 240 Cubikfuss.

Da der Apparat sämtliche Manipulationen, als Auskochen mit Soda, Säure und Wasser, Waschen und Dämpfen der Kohle aufeinanderfolgend ausführt, so ist die Abnutzung der Kohle eine sehr geringe und die Arbeit eine entsprechend billigere.

Gestützt auf obige Vortheile und den damit erzielten Resultaten ist es mir möglich, Ihren Apparat jedem Fabrikanten hiermit angelegentlichst empfehlen zu können.

Hochachtend
per **Aug. Carl Maquet**
C. Maquet.

Das vorstehende Zengnisscopic mit dem Originalzeugniss dem Wortlaute nach vollkommen übereinstimmend ist, wird hierdurch der Wahrheit gemäss amtlich beglaubigt.

Cöthen, 29. April 1869.

Bürgermeister und Rath.

(L. S.)

Herrn Civil-Ingenieur **Otto Baumann** in Cöthen bestätigen wir hiermit gern, dass sein Knochenkohlen-Wiederbelebungs-Apparat zu unserer grössten Zufriedenheit während der vergangenen Campagne in unserer Fabrik gearbeitet hat. Bei einer Verarbeitung von 1200 Ctr. Rüben reichte ein Apparat aus, um die angewendete Dünnsaftkohle mit Brüchenwasser, Aetznatron, Soda und Säure auszukochen, zu waschen und zu dämpfen, um eine gut filtrirende, staubfreie Kohle zu erhalten. Alle diese Manipulationen werden aufeinanderfolgend in demselben Apparat ohne irgend welche mechanische Behandlung der Kohle vorgenommen; hierbei stellte sich am Schlusse der Campagne eine ganz bedeutend geringere Abnutzung der Kohle heraus, so dass sich auch hierdurch schon der Apparat sehr vortheilhaft auszeichnet.

Es gereicht uns zur grössten Gennghung, einem jeden Fabrikanten den Apparat aufs Wärmste empfehlen zu können.

Sudenburg-Magdeburg, den 20. April 1869.

Koch, Freitag & Teubener.

Das obige Copie genau dem Wortlaute des Originalzeugnisses übereinstimmend ist, wird hierdurch der Wahrheit gemäss bestätigt

Cöthen, 27. April 1869.

Bürgermeister und Rath.

(L. S.)

Verzeichniss

derjenigen Fabriken, welche bereits mit diesen Knochenkohlen-Wiederbelebungs-Apparaten arbeiten.

Zuckerfabrik: **Koch, Freitag & Teubener** in Sudenburg-Magdeburg.

„ **A. C. Maquet** in Sudenburg-Magdeburg.

„ **Ruda Pabiancka** in Polen.

„ **J. F. Fikentscher** in Regensburg.

„ **G. Göllner** in Kletzschkau in Schlesien.

„ **Irxleben** bei Magdeburg.

„ **Robert & Co.** in Gr. Seelowitz bei Brünn.

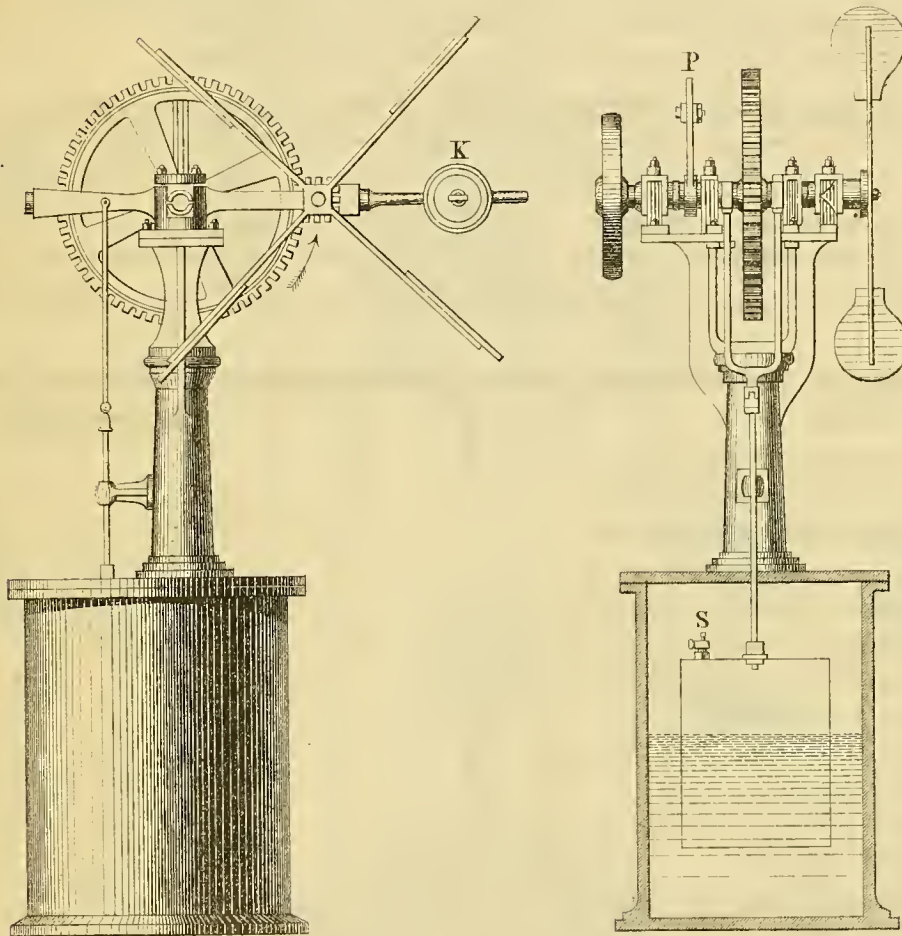
„ **J. & O. Karcher** in Frankenthal (Bayr. Pfalz).

„ **Gebrüder Schoeller** in Breslan.

Traubenzuckerfabrik **A. Remy & Espenscheid** in Neuwied.

Stärkefabrik **A. Scholten** bei Brandenburg a. d. Havel.

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Patentirter Kraft-Regulator für Dampfmaschinen von Reigers.

Der Hauptbestandtheil des Apparates, der eigentliche Regulator ist ein Flügelapparat, eine Achse, worauf 4 Arme befestigt sind, welche an ihren Enden eiserne Platten tragen von ungefähr 1 □ Decimètre Oberfläche. Diese Achse erhält ihre drehende Bewegung durch die Dampfmaschine, womit der Apparat verbunden ist; die Arme, mit den daran befestigten Platten bewegen sich in der Luft, und erleiden dadurch einen Widerstand, der von der Umfangsgeschwindigkeit, dem Stande, der Anzahl und Grösse der Flügelflächen abhängt. Nimmt die Umfangsgeschwindigkeit oder die Anzahl der Umdrehungen in einer bestimmten Zeit zu oder ab, so vermehrt oder vermindert sich zugleich der Widerstand der Luft, jedoch nicht in einfachem Verhältnisse, da bei einer doppelten oder dreifachen Geschwindigkeit dieser Widerstand vier- oder neunmal grösser wird, als ursprünglich der Fall war.

Dieser Widerstand wird dadurch überwunden, dass man auf der Flügelachse ein kleines Getriebe befestigt, worin ein Zahnrad greift, welches direct durch einen Riemen von der Dampfmaschine herumgedreht wird.

Man wird aber sofort begreifen, dass das Getriebe mit der Flügelachse nicht herumgedreht werden kann, ohne zu gleicher Zeit Letzterem das Bestreben mitzuthellen, mit Zapfen und Lager in der Richtung der Kraft sich fortzubewegen, oder wenn dieser Bewegung durch einen Widerstand entgegengetreten wird, auf Letzteren einen gewissen Druck auszuüben, einen Druck, der mit dem Gange der Maschine oder dem Widerstande der Luft sich verändert.

Wenn nun die Stützpunkte der Flügel an einer Art Hebel aufgehängt sind, also beweglich gemacht werden, und oben genannter Druck beim normalen Gang der Maschine durch ein Gegengewicht balancirt ist, so muss das Gleichgewicht unterbrochen werden und der Hebel nach der einen oder anderen Seite durchschlagen, sobald einige Veränderung in der Umdrehungsgeschwindigkeit der Maschine eintritt.

Eben dieser Hebel ist es, wodurch das Drosselventil im Dampfrohr verstellt wird, und folglich der Dampfverbrauch in Uebereinstimmung kommt mit der durch die Maschine zu leistenden Arbeit, und zu diesem Zwecke hat man nur die Arme des Hebels oder Wagebalkens, oder statt dessen, einen zu diesem Zwecke an der Achse desselben angebrachten Hebel p durch Verbindungsstange und Winkelhebel mit der Achse des Drosselventils zu verbinden. Durch zweckmässige Veränderung der Länge dieser Hebelarme ist man im Stande, die Wirkung des Apparates innerhalb bestimmter Grenzen willkürlich zu verändern.

Mit diesen wenigen Worten ist in Hauptzügen das Princip des neuen Regulators beschrieben, und wird man angeben müssen, dass die Sache sehr einfach ist.

In dem hohlen Fuss des Regulators befindet sich ein unten offener Schwimmer, welcher an dem den Flügeln entgegengesetzten Ende des beweglichen Hebels angehängt ist und durch die in dem oberen Theil des Schwimmers zusammengepresste Luft bei etwa plötzlich eintretenden grossen Geschwindigkeits-Differenzen, vermittelnd wirkt. Je nach der Oeffnung des kleinen Lufthähnhchens s, kann die Wirkung des Schwimmers modificirt werden. Die Verbindung und Abhängigkeit von der Dampfmaschine wird erzielt, indem man von einer auf der Schwungradwelle anzubringenden Riemscheibe, ein Riemen zur Riemscheibe des Regulators führt.

Ausführliche Broschüren über diesen Regulator und dessen Bewährung stehen zu Diensten.

Grössenbezeichnung und Preis-Verzeichniss.

\mathcal{N}°	0.	I.	II.	III.	IV.	
Ausreichend zu Maschinen bis	2—4	10	35	80—100		Pferdekraft.
Preis	90	100	110	125	300	Thlr.

Behufs Bestellung u. Ausführung sind nachstehende Fragen zu beantworten.

Frage.	Beantwortung.
1. Ist eine Zeichnung der Maschine vorhanden? Wenn das der Fall ist, wird um Einsendung gebeten	
2. Ist die Maschine horizontaler oder verticaler Construction?	
3. Wie stark ist die Maschine in wirklichen Pferdekraften?	
4. Mit welch' höchster Dampfspannung arbeitet dieselbe? und mit welch' geringster Dampfspannung ist dieselbe im Stande ihre Arbeit zu verrichten?	
5. Arbeitet die Maschine mit Expansion? und mit welcher Füllung?	
6. Welche Regulirungsvorrichtung besitzt die Maschine, Drosselklappe oder Drossel-Ventil?	
7. Ist die Maschine eine Zwillingmaschine und wie viel dieser Regulirungsvorrichtungen besitzt sie?	
8. Wie viel Rotationen soll die Maschine per Minnte machen?	
9. Welchen Durchmesser hat die Maschinenwelle in Millimeter?	
10. Welchen Durchmesser hat das Dampfrohr?	
11. Arbeitet die Drosselklappe leicht und schliesst dieselbe so, dass die Geschwindigkeit der leeren Maschine unter vollem Dampfdruck unter die normale herabsinkt, wenn die Klappe geschlossen wird?	
12. Was wird durch die Maschine betrieben?	

Anmerk. Bezüglich der Drosselklappen verweisen auf Tafel VI. Fig. 16.

Beantwortet durch:

.....den.....ten.....187.....

Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in **Buckau-Magdeburg.**

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23. Hoestr. 202. Elisabethstr. 655-1. Opernring 10.

Weston's Patent Differential-Flaschenzug.

General-Debit für den Continent: Schäffer & Budenberg.

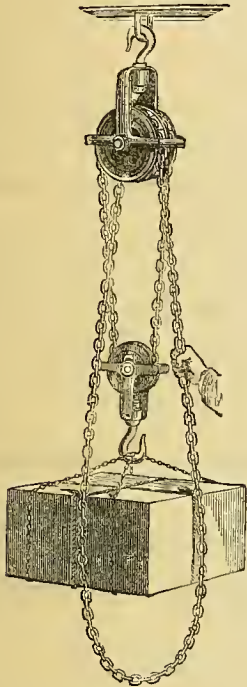


Fig. 1.

Differential-Flaschenzug ohne Ratsche

zu 5, 10, 20, 40 *Etr.* Last.

Ist so eingerichtet, dass die Last durch Ziehen an der Kette, also durch eine unten wirkende Kraft gehoben wird. Ein Mann kann hiermit bis 20 *Etr.* heben.

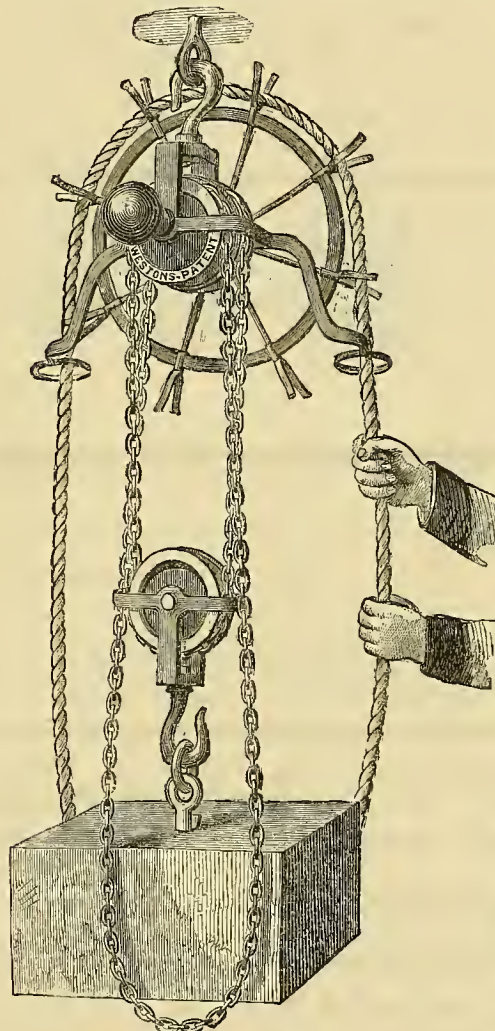


Fig. 3.

Differential-Flaschenzug mit Seil-Rad zu 40, 60, 80 *Etr.* Last.

Die Zugkraft wirkt unten an einem über ein Rad gehenden endlosen Seile. Ein Mann kann hiermit bis 20 *Etr.* heben.

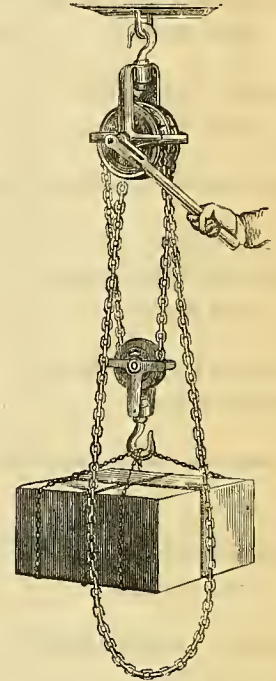


Fig. 2.

Differential-Flaschenzug mit Ratsche

zu 20, 30, 40, 60 *Etr.* Last.

Ist da anwendbar, wo die wirkende Kraft oberhalb der Last angebracht wird und dort an der Ratsche wirken kann, wie z. B. bei Laufkränen.

Ein Mann kann hiermit über 20 *Etr.* heben.

Die Haupt-Eigenschaften dieses Patent Differential-Flaschenzuges sind:

- 1) Dass die zu hebende Last in jeder Stellung verbleibt, wenn man auch die Zugkette auslässt, ja selbst, wenn sie dort, woran gezogen wird, abreißen sollte;
- 2) Dass er eigentlich nur aus 2 Rollen besteht, während die gewöhnliche Art bei gleicher Leistungsfähigkeit 3 fixe und 2 bewegliche, mithin 5 Rollen haben müsste.

Die obere Flasche hat eine doppelte Rolle von verschiedenem Durchmesser, mit Zähnen, in welche die Glieder einer endlosen, um beide Rollen gewundenen Kette einpassen. Die Kette hängt in Schlingen herunter. In der einen Schlinge ist eine Rolle mit Haken zum Tragen der Last befestigt, bei der andern wirkt die Zugkraft.

Da die Höhe, auf welche die Last zu heben ist, die Länge der Kette bedingt, so muss erstere oder letztere bei Ertheilung einer Bestellung mit aufgegeben werden.

Bei Fig. 1 und Fig. 3, die von unten gehandhabt werden, muss die Kette etwas mehr als die vierfache Länge der Erhebungshöhe haben. Bei Fig. 2 ebenso wenn die Kraft unten wirkt. Ist diese jedoch oben an der Ratsche wirksam, so ist die Kette nur etwas länger als die doppelte Erhebungshöhe nothwendig.

Wegen der grossen Genauigkeit, die bei diesen Patent-Ketten erforderlich ist, werden dieselben eigens zu diesen Flaschenzügen mittelst Maschine hergestellt.

Die Flaschenzüge werden nur mit Kette abgegeben.

verte!

Bezeichnungen und Preis-Verzeichniss.

Zu heben bis	1/4 Ton 5 Ctr.	1/2 Ton 10 Ctr.	1 Ton 20 Ctr.	1 1/2 Ton 30 Ctr.	2 Tons 40 Ctr.	3 Tons 60 Ctr.	4 Tons 80 Ctr.
Fig. 1. Differential-Flaschenzug ohne Ratsche. Probirte Patent-Kette per englisch Fuss	Thlr. 8 2/3. —	Thlr. 11. — —	Thlr. 14 1/2. —	Thlr. 18. — —	Thlr. 21 2/3. —		
Fig. 2. Differential-Flaschenzug mit Ratsche. Probirte Patent-Kette per englisch Fuss .....	.....	.....	Thlr. 20. — —	Thlr. 22 1/2. —	Thlr. 26. — —	Thlr. 29 2/3. —	
Fig. 3. Differential-Flaschenzug mit Seilrad. Probirte Patent-Kette per englisch Fuss .....	.....	.....	.....	.....	Thlr. 28. — —	Thlr. 36. — —	Thlr. 54. — —
..... .....	.....	.....	.....	.....	„ — 9. —	„ — 12. —	„ — 16 1/2.
Zu heben bis	5 Tons 100 Ctr.	6 Tons 120 Ctr.	8 Tons 160 Ctr.				
Differential-Flaschenzug mit Seil- und Zahnrad. Probirte Patent-Kette per englisch Fuss.....	Thlr. 71. — —	Thlr. 84. — —	Thlr. 106. — —				
.....	„ — 18. —	„ — 29. —	„ 1 1/5. —				

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Fig. 4. Fig. 5. Fig. 6.



Kloben-Flaschenzüge.

Diese **Kloben-Flaschenzüge** sind höchst solide ausgeführt; die Seitenwangen bestehen aus Schmiedeeisen und bilden die Lager für die Rollen. Die Rollen bestehen aus Gusseisen.

Dimensionen der Ausführung und Preis-Verzeichniss.

Aeusserer Durch- messer der Rollen	2½	3½	4	4¾	5	6	7	8	9	10	11	12½	14	15	16	Zoll engl.	
	65	90	102	120	127	152	178	214	229	255	280	305	357	583	609	Millim.	
Weite der Spur..	¾	½	⅝	¾	⅞	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	Zoll engl.	
	9	13	16	19	22	26	32	39	45	52	58	65	68	77	85	Millim.	
Preis für Kloben mit	1 Rolle	2⅙	2⅓	2½	3½	4	5	6⅙	8½	12	16	22	30	37½	44	54½	Thaler.
	2 Rollen	2⅝	3½	4	5	6⅙	7½	10⅝	15⅘	20	30	38	44	57⅙	68	81⅙	"
	3 Rollen	3½	4	4⅓	6⅙	7⅝	9½	13½	21½	28	39	48	58	74⅝	88	107½	"
	4 Rollen	4⅝	5⅘	6⅙	8	10⅙	12⅘	20⅙	28	37	48	58	68	94½	118⅝	129	"
Annäherndes Gewicht, welches jede Rolle heben kann ca	1	3	5	7	10	12	18	27	35	48	60	75	90	105	120	Centner.	

Maschinen- und Dampfkessel-Armatur-Fabrik von

Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN, Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

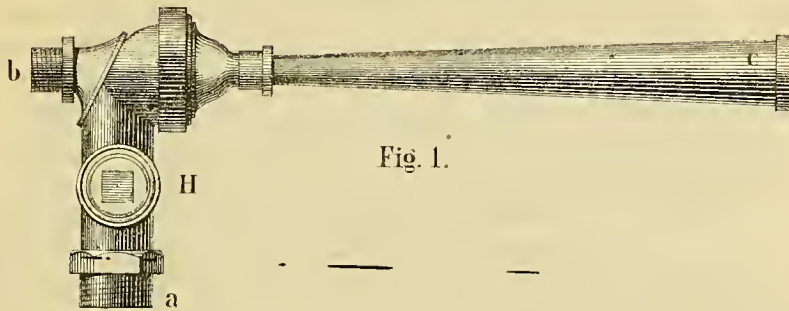


Fig. 1.

Dampf-Ejections-Apparat von Nagel und Kaemp.

Fig. 2.

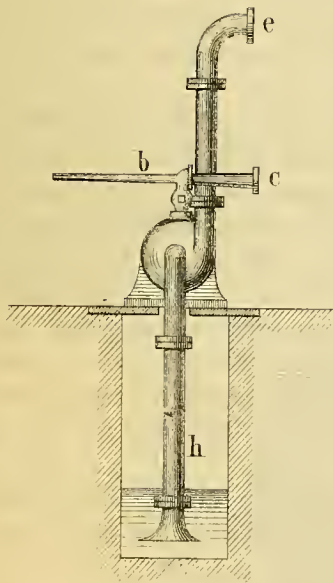


Fig. 4.

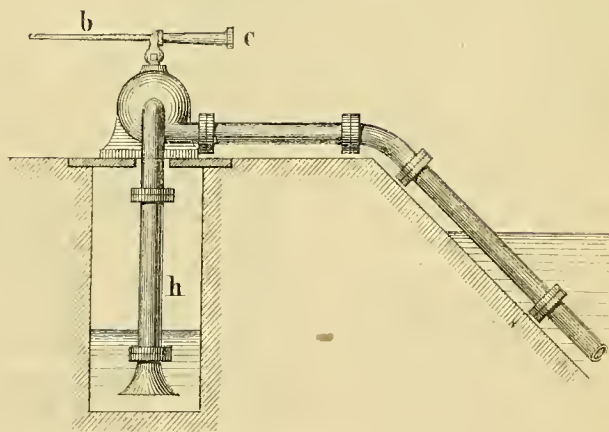
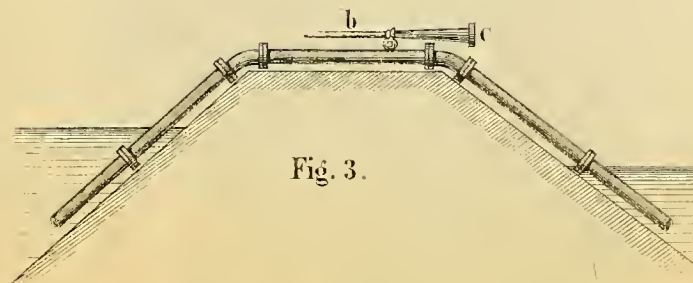


Fig. 3.



Anwendungen des Dampf-Ejections-Apparat's.

Dampf-Ejections-Apparat von Nagel & Kaemp.

Es ist bekannt, dass die immer mehr zur Anwendung gelangenden Centrifugalpumpen an einem Fehler leiden, welche auf deren Betrieb oft störend wirkt, es ist dies die Schwierigkeit des ersten Anfüllens der Pumpen. Kann man die Pumpe mit ihrem Gehäuse tiefer legen als der Unterwasserspiegel sich befindet, so ist der gerügte Uebelstand allerdings nicht vorhanden, aber diese Fälle gehören zu den seltensten. Um das Anfüllen der Pumpe überhaupt zu ermöglichen ist ein Fuss- oder Bodenventil erforderlich, welches den Durchgang des Wassers erschwert und schwer, namentlich bei nicht ganz klarem Wasser, dicht zu halten ist. Je grösser die Pumpen sind, um so grösser sind die Saugrohre und selbstredend die Bodenventile. — Mit der Grösse der letztern wachsen aber auch die Schwierigkeiten des Dichthaltens und mehren sich die sonst gerügten Uebelstände, und die daraus entstehenden Betriebsstörungen sind um so empfindlicher, als das Ventil stets im Unterwasser liegen muss, also geradezu unzugänglich ist.

Diese Uebelstände werden durch den „Dampf-Ejections-Apparat“, welcher ein rapides Ansaugen von Centrifugalpumpen, Heberrohrleitungen etc. ermöglicht und das Bodenventil gänzlich entbehrlich macht, vollkommen beseitigt.

Fig. 1 stellt den Apparat in $\frac{1}{4}$ n. G. in äusserer Ansicht dar. Fig. 2, 3, 4 sind Anwendungsfälle.

Der Apparat selbst besteht aus einem einfachen Düsensystem, welches nach bekannten Principien — sobald ein Dampfstrahl durch dasselbe geschickt wird — saugend wirken muss.

Anbringung und Handhabung Fig. 2. Der Apparat wird mittelst Gewindezapfens a (Fig. 1) auf die höchste Stelle des Pumpengehäuses aufgeschraubt. Die obere Mündung des Druckrohres e wird durch ein mit Lehm bestrichenes Brett verschlossen. Bei b wird ein Rohr vom Betriebs-Dampfkessel her angeschlossen: Will man nun ansaugen, so öffne man Hahn H und gebe von b her Dampf. Es wird dann zunächst die Luft aus Rohr h und Pumpengehäuse entfernt, das Wasser steigt nach, mischt sich endlich condensirend mit dem bei b eintretenden Dampfstrahl und fliesst zuletzt durch C aus in's Freie, so dass die Pumpe also vollkommen gefüllt ist. Ist das der Fall, so setze man die Pumpe mit ihrer Normalgeschwindigkeit in Gang, entferne das bei e vorgelegte Brett, und schliesse Hahn H. Es leuchtet ein, dass diese Einrichtung nichts zu wünschen übrig lässt und selbst längere Rohrleitungen werden in kürzester Zeit luftleer gemacht und angesogen.

Eine andere Anwendung dieses Apparats ist das Ansaugen von Heberrohrleitungen. Bekanntlich wird, wenn Wasser sich im luftverdünnten Raume befindet, stets die dem Wasser beigemengte atmos. Luft frei, und ist diese Luftentbindung um so grösser, je stärker das Vacuum. Dieser Umstand ist der Grund, warum Heberrohrleitungen, welche hoch hinaufgeführt sind — sehr bald den Dienst versagen, wenn nicht die sich am höchsten Punkte ansammelnde Luft — zeitweise entfernt wird. Bringt man besagten Ejections-Apparat an der höchsten Stelle solcher Leitungen wie bei Fig. 3 an, so wird schon ein sehr geringer continuirlicher Dampfstrahl genügen, um successive alle Luft abzuführen.

Ebenso gestattet die Anwendung des Ejections-Apparats, als continuirlich arbeitender Apparat, die Centrifugalpumpen anders als es bisher möglich war, zu disponiren, und die Pumpe selbst wie in Fig. 4 gegeben, direct mit einem Heberrohr so zu combiniren, dass nie höher gepumpt zu werden braucht, als der absoluten Differenz des Ober- und Unterwasserspiegel entspricht. Diese Aufstellungsweise der Pumpe ist vom grössten Vortheil da, wo sehr veränderliche Aussenwasserstände vorkommen.

Ohne Zweifel lässt der Ejections-Apparat noch mannichfache andere Anwendungen z. B. als Luftpumpe, überhaupt als Ventilator u. s. w. zu, und empfehlen wir daher denselben aus bester Ueberzeugung allseitig wo er am Platze erscheint, namentlich aber zu den specieller beschriebenen Fällen.

Der Preis eines solchen in gutem Metall ausgeführten Apparats, incl. Absperrhahn H, beträgt 15 Thlr.

Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt PRAG, und WIEN,
 Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

Fig. 2.



Fig. 1.

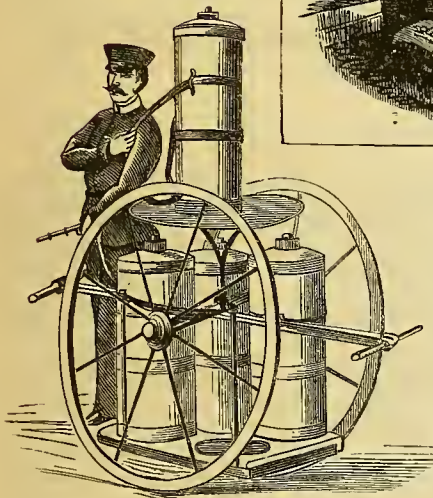
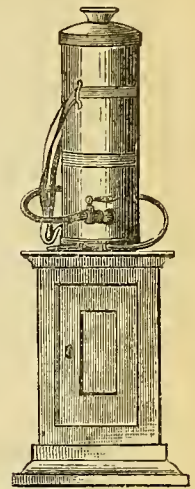


Fig. 3.

Schäffer & Budenberg'sche
 Patent-Gaspritze
 genannt
Extincteur.

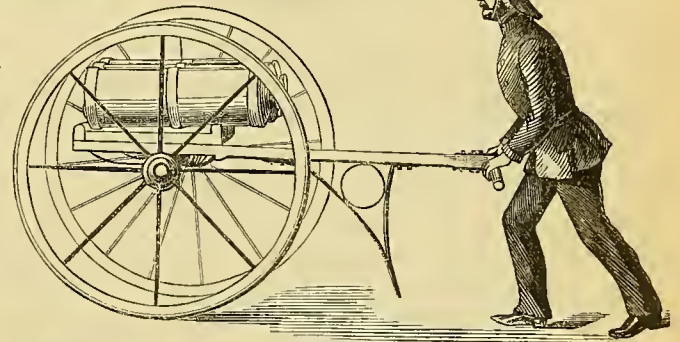
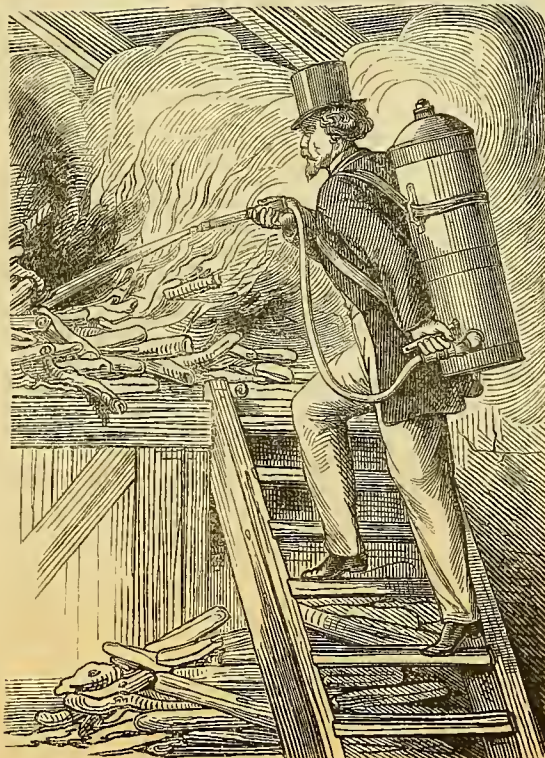


Fig. 4.

Preise.

	thl.	gr.
Gaspritze Nr. 3. = 30 Pfd. Wassergehalt	25	—
„ „ 4. = 50 „ „	30	—
„ „ 5. = 70 „ „	35	—
„ „ 6. = 90 „ „	40	—
Füllung zur Gaspritze Nr. 3	15	—
„ „ „ „ 4	20	—
„ „ „ „ 5	25	—
„ „ „ „ 6	1	—
Manometer zu jedem Apparat passend	10	—
Feuerwehrcwagen für 3 Gaspritzen	45	—
„ „ 4 „	55	—



Ausführliche Prospekte über die Patent-Gaspritze, woraus die nachfolgenden Berichte entnommen sind, stehen auf Verlangen zu Diensten.

Instruktionen zum Füllen und zur Handhabung werden den Apparaten besonders beigegeben.

Staats- und Communal-Behörden, Eisenbahn-, Salinen-, Hütten-, Bergwerks- und Fabriks-Verwaltungen, Schiffseigner u. machen noch besonders auf die Wächter-Control-Uhr, Patent Türk, aufmerksam. (Siehe beiliegende Tafel II. des Preis-courants.)

Werden Patent-Gaspritzen auf denjenigen Stationen vertheilt, die der unter dieser Control-Einrichtung stehende Wächter in gewissen Zeitabschnitten regelmäßig zu besuchen hat, so darf mit Sicherheit angenommen werden, daß Brände stets in ihrer Entstehung angetroffen und mit Leichtigkeit im Keime erstickt werden.

Postamente von Holz (Fig. 1.) werden billigt geliefert.

Gaspritzen Nr. 3. und 4. sind zum Gebrauche für das Haus, Nr. 4. und 5. für Fabriken und Nr. 5. und 6. für Feuerwehren am geeignetsten.

Erklärung der Construction der Patent-Gaspritze.

Die Patent-Gaspritze ist ein cylindrisches Gefäß von verzinnemtem Stahlblech, sehr solid construirt, auf 10 bis 12 Atmosphären Druck geprüft und leicht transportabel.

Der hermetisch verschließbare Apparat wird mit Wasser gefüllt, das unter einem durch directe Gas-Entwicklung vermittelt Chemikalien erzeugten Drucke zwischen 2 und 6 Atmosphären, je nach Temperatur des Wassers resp. des Aufbewahrungsortes, steht.

Die Patent-Gaspritze der neuen Construction ist unten mit einer Verschlusschraube und einem Hahn versehen.

Letzterer ist zur Anbringung des Gummischlauches und des Manometers mit einem Gewinde versehen.

Außerdem befinden sich am Apparat noch zwei Tragriemen, vermittelt welcher derselbe bequem auf dem Rücken getragen werden kann.

Um im Falle der Noth die Gaspritze mit leichter Mühe ohne andere Hülfe und in der größten Eile auf den Brandplatz bringen zu können, muß dieselbe stets auf einem ca. 3 Fuß hohen Gestelle stehen. (Siehe Fig. 1.)

Die Gaspritzen für den öffentlichen Löschdienst müssen auf oder in der Nähe der sogenannten Extinguirwagen placirt sein. Letztere (Fig. 3 u. 4) sind zum Fortfahren von 3 bis 4 Gaspritzen durch 1 bis 2 Personen bestimmt, und so eingerichtet, daß die Apparate vom Wagen aus ohne Mühe auf den Rücken genommen und auf die Brandstätte gebracht werden können.

Die Patent-Gaspritze soll dazu dienen, Brände in ihrer ersten Entstehung zu bekämpfen, und falls dieselben schon größere Dimensionen angenommen, solche möglichst zu beschränken oder aufzuhalten, bis andere Löschmittel zur Action bereit sind.

Die Gaspritze macht demnach die anderen Löschgeräte keineswegs überflüssig, sondern will nur die erste, wichtigste Stellung unter denjenigen Apparaten einnehmen, welche durch schnelle, erfolgreiche Verwendung Feuerbrünste verhüten sollen.

Ueber den Werth der Patent-Gaspritze für das Feuerlöschwesen specteller zu sprechen, glauben wir durch die vielen Berichte, Gutachten u. f. w. unparteiischer, fach- und sachkundiger Männer Deutschlands, Englands und Frankreichs überhoben zu sein, allein wir heben aus denselben nur übersichtlich hervor: Daß die Patent-Gaspritze sich unstreitig am Besten zur Bekämpfung der Brände in ihrem ersten Entstehen und deren Beschränkung auf einen kleinen Heerd eignet, und für jeden Hausbesitzer, insbesondere aber für jede Fabrik, für jeden Hotelier, für jedes Schloß, für Märkte u. f. w., für Besitzer feuergefährlicher Geschäfte und Werkstätten, für öffentliche Gebäude, als Kranken- und Irren-Anstalten, Archiven, Registraturen Museen, Bibliotheken, Theatern u. f. w., für Schiffe, für Fortificationen u. f. w., sowie für Feuerwehren dringend zu empfehlen ist.

Zuschriften und Gutachten, den hohen Werth der Patent-Gaspritzen als Feuer-Lösch-Requisit betreffend.

Bericht über den gelöschten Brand auf dem Berlin-Potsdam-Magdeburger Eisenbahnhofe.

Bescheinigung.

Auf dem Bahnhof zu Magdeburg gerieth am 24. März cr. ein der Berlin-Potsdam-Magdeburger Eisenbahn-Gesellschaft gehöriges Magazin- und Schmiedegebäude in Brand.

Das Gebäude von 100 Fuß Länge und 18 Fuß Tiefe war von Fachwerk mit äußerer und innerer Brettbekleidung ausgeführt, die Zwischenfüllung der Wände bestand aus Coaksasche, die Dachbedeckung aus Steinpappe. In der Nähe des qu. Gebäudes befanden sich zwei Hydrants, welche beim Beginn des Feuers durch angelegte Schläuche in Thätigkeit gesetzt wurden; trotz des reichlich vorhandenen Wassers stand die Bewältigung des Feuers bei dem herrschenden, ziemlich scharfen Winde nicht zu ermöglichen, und brannte das Gebäude auf rot. 66 Fuß Länge vollständig nieder.

Nach dem Eintreffen von 4 Extinguirs, requirirt aus der Fabrik der Herren Schaeffer & Budenberg zu Budau, gelang es, das Feuer auf den bereits eingenommenen Heerd sofort zu beschränken und alsbald vollständig zu dämpfen.

Magdeburg, den 4. Mai 1870.

(L. S.)

(gez.) Landmann,

Abtheilungs-Baumeister der Berlin-Potsdam-Magdeburger Eisenbahn.

Magdeburg, den 23. November 1869.

Herren Schaeffer & Budenberg, Budau.

Es macht uns Vergnügen, Ihnen auch noch auf diesem Wege die Mittheilung zu machen, daß wir die von Ihnen im Juni a. c. bezogenen Gaspritzen mit ganz besonderem Erfolge angewandt haben. Bereits bei 5 in unserem Cardenraume entstandenen Bränden hat sich gezeigt, daß das Feuer nicht nur binnen höchstens drei Minuten wieder gelösch war, sondern daß sowohl die sehr empfindliche Cardemaschine, als das zu verarbeitende Material keinen Wasserschaden erlitten haben. Es steht wirklich zu wünschen, daß diese so vorzüglichen Feuer-Lösch-Apparate allgemeinen Eingang finden, und sind wir mit Vergnügen bereit, auf etwaige Anfragen die ausführlichste Auskunft zu ertheilen, was wir um so sicherer können, als wir den Extinguiren in der That das Bestehen unserer Fabrik verdanken.

Bei heutiger Controlle zeigten unsere Extinguirs ca. 3 Atmosphären Druck, obwohl dieselben noch in ungeheizten Räumen lagen. Wir werden aber Ihrer gef. Vorschrift gemäß, die Apparate in warmen Räumen aufbewahren und sonst nach Ihrer geneigten Anleitung verfahren.

Hochachtungsvoll

C. Mühlstephan & Reusing.

Herren Schaeffer & Budenberg. Budau-Magdeburg.

Waldheim, den 19. Mai 1870.

Schon bei Abhaltung eines Gantages für Feuerwehren im vorigen Jahre hatten wir bei einer Probe Gelegenheit, die vortreffliche Wirksamkeit des von Ihnen bezogenen Extinguirs Nr. 4 zu bewundern, indem damit ein von uns erbautes, 6 Ellen großes, mit Holzspähnen angefülltes und mit Theer bestrichenes Holzhaus, nachdem es vollständig im Feuer stand, in wenigen Minuten gelösch wurde, und heute können wir Ihnen mit Freude bezeugen, daß wir mit diesem Apparat am 2. März e. unsere Stadt vor jedenfalls großem Unglück behütet haben.

Das Feuer war Nachts 12 Uhr im Holzbodenraum des Ritter'schen Hauses (dieses, sowie die angrenzende alte Knabenschule sind alte Baulichkeiten und bei Feuer in sehr gefährlicher Lage für einige Stadttheile) ausgebrochen, war auf einem zweiten Boden durchgebrannt, hatte 6" Balken durchgeholt, als der Extinguir am Platze erschien, und in ca. 6 Minuten war die helle Flamme, welche zu zwei Fenstern herausschlug, damit bekämpft. Durch das erzielte dankbare Resultat sah sich ein Nachbar veranlaßt, uns den Betrag zur Anschaffung eines zweiten Extinguirs zu behändigen. Sie empfangen solchen eintreffend mit der Bitte, uns dafür ein weiteres Exemplar in gehabter Güte gefälligst zuzusenden.

gez. Das Commando der freiw. Turner-Feuerwehr durch Heinrich Bergmann.

Brief an unsern Agenten Herrn Valentin Weissz in Temesvar.

Arad, am 23. Mai 1868.

Herrn Valentin Weissz in Temesvar.

Ich fühle mich angenehm veranlaßt, Sie mit Gegenwärtigem von einem glänzenden Erfolge der durch Sie bei uns eingeführten echt englischen Extinguirs zu verständigen.

Als am 16. d. M. durch einen unglücklichen Zufall in dem, unter meinem Spezereiwarenlager befindlichen dazu gehörigen Keller Feuer ausbrach, welches bei dem Vorhandensein so vieler feuergefährlichen und explosiblen Stoffe leicht die bedenlichsten Dimensionen hätte annehmen können, bewahrte mich eben der genannte vortreffliche Feuerlöschapparat vor größerem Unglück, indem durch Ihren Vertreter am hiesigen Platze, unsern hochgeachteten Mitbürger Herrn Josef Steiniger junior, mit zwei Extinguiren die Löschung des immer mehr um sich greifenden Feuers unternommen wurde.

Dieselbe gelang vollständig; das Feuer war in kürzester Zeit gelösch!

Ich fühle mich demzufolge umso mehr zur wärmsten Anerkennung gedrängt, als der so entschieden durchgreifende Erfolg der Extinguirs in mir die vollste Ueberzeugung von deren wohltätiger Wirksamkeit befestigte.

Ich kann nur im allgemeinen Interesse wünschen, daß dieselben die weiteste Verbreitung in unserem Vaterlande finden mögen!

Mit besonderer Achtung zeichnet

W. S. Frinner.

** Liverpool, 17. Juli. Der Dampfer „Great Britain“, von Australien kommend, mit 700 Passagieren am Bord, darunter eine Anzahl von Deutschen, war auf der See in großer Gefahr ein Raub der Flammen zu werden. Ein Faß mit Rum zerbrach im Waarenraum, fing Feuer und füllte den ganzen Raum mit Flammen an. Große Bestürzung und Verwirrung bemächtigte sich der Passagiere; der Oberbeamte holte jedoch schnell einen tragbaren Blechfaß, der mit kohlen-saurem Wasser gefüllt war und Extincteur genannt wird, drang mit Gefahr seines Lebens vor und löschte mit überraschender Schnelligkeit das Feuer. Die dankbaren Passagiere haben dem Manne, der sie aus so großer Gefahr rettete, ein namhaftes Geschenk überreicht. Menschenleben waren glücklicherweise nicht zu beklagen, doch wurde Vieles von den Flammen beschädigt.

Herrn W. G. Wick, Manchester.

Liverpool, 2. August 1869.

Auf der letzten Reise der „Great Britain“ von Melbourne nach Liverpool hat Ihr Extincteur eine schwere Probe mit höchst zufriedenstellendem und dankenswerthstem Erfolge bestanden. Ein Feuer, welches die bedrohlichsten Dimensionen annehmen zu wollen schien, brach in dem Proviant-Raum aus, indem ein halb geleertes Faß Rum Feuer fing. Der Ober-Officier kam sofort mit einem Ihrer tragbaren Extincteure hinzu und griff das Feuer an, welches er mit erstaunlicher Schnelligkeit löschte. Wir können diese kleinen Apparate als ein stets bereitcs Hülfsmittel gegen Brände nicht hoch genug schätzen.

Bitte, senden Sie uns gef. noch 6 Apparate, die noch an Bord der „Great Britain“ vor ihrer Abreise am 12. c. aufgestellt werden sollen.

Ihre ergebenen

Gibbs, Bright & Co.

Auf Wunsch der Herren Schäffer & Budenberg in Budau-Magdeburg wird denselben hiermit bescheinigt, daß die von denselben bezogenen vier Stück Extincteur Nr. 3, 4, 5 und 6 sowohl bei einer Probe, als auch bei einem großen und kleinen Brande sich gut bewährt haben und dieselben mit Recht zu empfehlen sind.

Bei der geschehenen Probe ist ein Faß von 5' Höhe und Weite mit Hobelspänen und Holzstücken, welches mit Del getränkt, dazu 100 Pfund Goudron gemischt, gefüllt in Brand gesteckt.

Bei vollem Brande, wobei sich eine Flamme von 12 Fuß Höhe zeigte, hat der Extincteur Nr. 6 vollständig gelöscht. Auch bei dem großen Fabrikbrande am 7. Jan. cr. sind alle vier Extincteur benutzt worden und haben dabei gute Dienste geleistet.

Ferner bei einem ausgebrochenen Brande an einer Destillationsablage, wo Rühlfuß und einige Centner Dese in Brand geriethen, haben die Extincteur Nr. 5 und 6 vollständig gelöscht.

Fabrik Webau, den 1. November 1868.

Photogen- und Paraffin-Fabrik von A. Niebeck.

gez. J. Bedel, Fabrik-Inspektor. gez. G. Bedel, Berg-Inspektor.

Potsdam, den 26. April 1870.

Auf Ew. Wohlgeboren verschiedene Anträge, betreffend den Feuerlöschapparat, Extincteur genannt, eröffnen wir Ihnen, daß wir eine Empfehlung dieses Apparates in dem diesseitigen Amtsblatte und eine Verfügung an die uns unterstellten Polizeibehörden erlassen haben, Ihre Verabstchtigung, in größeren wie in kleineren Gemeinden des hiesigen Regierungsbezirks mit dieser Patentspritze Löschversuche zu veranstalten und damit Vorträge über die Einrichtung und Anwendung derselben zu verbinden, thunlichst zu unterstützen.

Sollten Sie außerdem noch wie früher eine Abschrift des von uns erstatteten Gutachtens zu erhalten wünschen, so sind wir bereit, Ihnen eine solche zuzukommen zu lassen.

Königliche Regierung, Abtheilung des Innern.

(gez.) Satzweßel.

An

den Herrn Director Loeb,
im Hause Schäffer & Budenberg
in Budau-Magdeburg.
Wohlgeboren
z. Z. in Berlin.

Müller.

Abdruck

aus dem Amtsblatte der Königl. Regierung zu Potsdam und der Stadt Berlin.

Betrifft die Empfehlung eines Lösch-Apparates, Gaspritze oder Extincteur genannt.

Die Löschversuche, welche Herr Bernhard Loeb, Vertreter der Maschinen- und Dampfessel-Armatur-Fabrik von Schäffer & Budenberg in Budau bei Magdeburg mit einem in obiger Fabrik hergestellten Feuerlöschapparate, Gaspritze oder Extincteur genannt, angestellt hat, und die schon vielfach vorgekommene Anwendung desselben haben die außerordentliche Nützlichkeit dieses Apparates beim Ausbruch eines Feuers in geschlossenem Raume, sowie bei einem offenen Feuer, wenn dasselbe noch nicht zu große Ausbreitung gewonnen hat, festgestellt. Dieser Apparat ist besonders geeignet für große Gebäulichkeiten, also für Fabriken, Lagerräume, Oeconomiehöfe, Mühlen, für alle öffentlichen Gebäude, wie Armen-, Zucht-, Kranken-, Schauspielhäuser, Archive und überall da, wo es gilt, einen ausbrechenden Brand, bevor er größere Ausbreitung gewinnen kann, zu löschen.

Da die Beschaffung dieses Apparates keine bedeutenden Kosten erfordert, dessen Aufbewahrung und Gebrauch keine Schwierigkeiten verursacht, und die Fabrikbesitzer sowohl wie Herr Loeb sehr gern bereit sind, jede Auskunft und Unterweisung zu geben und Bürgschaft für eine längere Dauer der Füllung zu leisten, so können wir die Anschaffung dieses Apparates für die geeigneten Fälle nur empfehlen.

Potsdam, 26. April 1870.

Königliche Regierung, Abtheilung des Innern.

Ministerium des Königl. Hauses.

Berlin, den 19. März 1870.

Ew. Wohlgeboren erwidere ich auf Ihre Eingabe vom 13. d. Mts., betreffend die Einführung Ihrer Patent-Gaspritze auf den königlichen Familiengütern und in den königlichen Schlössern, sowie in den Archiven und Büreau des diesseitigen Ressorts, daß ich auf Grund der von der Hofkammer der königlichen Familiengüter angestellten Prüfung die Ueberzeugung von der Brauchbarkeit und dem hervorragenden Nutzen des gedachten Feuer-Extincteurs gewonnen habe.

Demzufolge werde ich die königliche Hofkammer zur Anschaffung einiger Gaspritzen nebst Füllungen und Manometer ermächtigen und die Einführung dieser Feuerpritze sämmtlichen königlichen Hofbehörden dringend empfehlen.

gez. von Sckleinitz.

An

den Director Herrn B. Loeb

Wohlgeboren

No. II. 187.

zur Zeit hier.

General-Direction der Telegraphen des Norddeutschen Bundes.

Berlin, den 11. März 1870.

Ew. Wohlgeboren theilt die General-Direction ergebenst mit, daß sämtliche Telegraphen-Directionen des Norddeutschen Bundes, deren Sitz sich in (folgt die Aufzählung der Telegraphen-Directionen des Norddeutschen Bundes) befinden, von dem empfehlenden Erfolge der hieselbst mit der Patent-Gaspritze angestellten Feuerlösch-Versuche in Kenntniß gesetzt sind, und daß denselben angeheim gegeben worden ist, auf Beschaffung solcher Gaspritzen Bedacht zu nehmen.

General-Direction der Telegraphen.

gez. von Chauvin.

An

Herrn Director Bernhard Loeb

Wohlgeboren

II. T. 1876.

hier.

Bureau der Feuerwehr von Berlin.

Berlin, den 29. Juli 1869.

Auf das gefällige Schreiben vom 18. cr. erwidere ich ergebenst, daß ich mit Interesse von der Verbesserung der Extincteure, deren Wirksamkeit zur Unterdrückung entstehender Brände allgemein anerkannt ist, Kenntniß genommen habe. Der Bitte, die Organisation der hiesigen Feuerwehr kennen zu lernen, komme ich gern entgegen und ist Herr Brand-Inspector Noel, Lindenstraße 50, angewiesen, Euer Hochwohlgeboren auf alle Anfragen Auskunft zu geben und die diesseitigen Einrichtungen zu zeigen.

Der Brand-Director

Geheimer Regierungsrath Seabell.

An

Herrn Director Bernhard Loeb

Hochwohlgeboren

9060 Fw.

zur Zeit hier.

Königl. Bayerische Ministerial- und Regierungserlasse.

Betreff: die Aufforderung an die Behörden zur Unterstützung der Einführung des aus der Maschinen- und Dampfkessel-Armaturen-Fabrik von Schäffer & Budenberg in Buckau-Magdeburg u. hervorgegangenen und durch Herrn Director Bernhard Loeb in Bayern einzuführenden neuen Feuerlösch-Apparates „Ertincteur“ genannt.

**Königreich Bayern.
Staatsministerium des Innern.**

Bernhard Loeb, Vertreter der Maschinen- und Dampfkessel-Armaturen-Fabrik von Schäffer & Budenberg in Buckau bei Magdeburg hat an verschiedenen Orten Bayerns mit einem von dem genannten Etablissement hergestellten Feuerlösch-Apparate (Ertincteur oder Gasspritze) Löschoerfuche angestellt.

Die befriedigenden Ergebnisse dieser Versuche sind in einem Artikel des „bayerischen Industrie- und Gewerbeblattes“ (Februarheft S. 54) veröffentlicht und es stimmt die Darstellung im Wesentlichen mit den von dem unterfertigten kgl. Staatsministerium erhaltenen technischen Gutachten über die Anwendbarkeit und Leistungsfähigkeit des Schäffer-Budenberg'schen Ertincteurs überein.

Unter Hinweisung auf diesen Artikel wird die kgl. Regierung, K. d. J., beauftragt, im Kreisamtsblatte auf die Zweckmäßigkeit des erwähnten Apparates aufmerksam zu machen und die Distrikts- und die Ortspolizeibehörden anzuweisen, daß sie dem Bernhard Loeb, welcher weitere öffentliche Versuche mit dem Ertincteur zu veranstalten gedenkt, hiebei nach Thunlichkeit fördernd an die Hand zu gehen.

Auf Sr. Königlichen Majestät Allerhöchsten Befehl.
v. Hörmann.

An die kgl. Regierung, K. d. J. von Oberfranken. Durch den Minister: der Generalsekretär, Ministerialrath von Du Bois.

Königl. ung. Ministerium des Innern.

An sämtliche Jurisdictionen.

Bei der mit dem von A. Vignoa und F. Carlier erfundenen, durch W. B. Dick & Comp. in England erzeugten und durch Valentin Weiß, Kaufmann in Temesvár, zu beziehenden **Feuerlösch-Apparate Ertincteur** jüngst in Pesth öffentlich angestellten Probe, hat der Apparat laut des sub 1. beige-schlossenen sachmännischen Gutachtens, mit ausgezeichnetem, bisher von keinem andern Löschapparate noch erreichtem Erfolge gewirkt, und sich als äußerst zweckmäßig erwiesen.

Empfehlenswerth machen den Ertincteur besonders die Einfachheit seiner Construction, die leichte Handhabung und die Mäßigkeit der Preise. Ich finde mich demzufolge veranlaßt, diesen neuen Feuerlösch-Apparat der Aufmerksamkeit der Kommunen zu empfehlen.

Dfen, 3. Mai 1870.

Baron Béla Wenckheim.

An Herrn Schäffer & Budenberg, Buckau-Magdeburg.

Ueber das bei der Erprobung Ihres Feuerlösch-Apparates erlangte gute Resultat hat das hohe k. k. Reichs-Kriegs-Ministerium M. S. mit dem Erlasse Abth. 4. Nr. 3013 vom 13. d. M. die **Einführung dieser Apparate bei der k. k. Kriegs-Marine anzuordnen** besunden, aus welchem Anlasse Sie mit Gegenwärtigem eingeladen werden (folgen Bestellungen und Geschäfts-Notizen) u. c.

Pola, am 23. Juli 1868.

S. k. Arsenal-Kommando.

Lösch-Bataillon.

Bescheinigung.

Dem Herrn Director Bernhard Loeb, Vertreter der Firma Schaeffer und Budenberg in Buckau bei Magdeburg, bezeuge ich hierdurch mit Vergnügen, daß die unter seiner Leitung am 23. dieses, im Freien abgehaltene Feuer-Lösch-Probé mit einer Gasspritze, Ertincteur genannt, meinen Erwartunnen, welche ich davon hegte, vollständig entsprach und daß es daher höchst empfehlenswerth und rathsam erscheint, solche Feuer-Lösch-Apparate in allen größeren Etablissements, als namentlich Kasernen, Fabriken, Archiven, Magazinen u. dgl. zur Hand zu haben, welche bei drohendem Feuer außergewöhnlich gute Dienste zu leisten sehr geeignet ist.

Fraunkfurt a. M., den 28. August 1869.

Der Major und Bataillons-Chef. Präsesler.

Die Unterzeichneten wohnten den Versuchen bei, welche Herr Bernhard Loeb am 29. September 1868 bei Gelegenheit der Ausstellung des landwirthschaftlichen Vereins für die Provinz Starkenburg mit den Ertincteurs des Hauses Schäffer & Budenberg zu Magdeburg anstellen ließ.

Ein weit gefeßter Holzstoß von beiläufig 400 Cubikfuß Heißlich Rauminhalt wurde, nachdem er vollständig in Brand gerathen, vermittelst des Apparats Nr. 6 vollständig in 3 Minuten gelöscht. Dieser Apparat Nr. 6 war bereits unter dem 13. Juli d. J. von der Firma A. Appel dahier angekauft und seit jener Zeit gefüllt in deren Magazin aufbewahrt, **und ist hierdurch der Beweis geliefert, daß diese Ertincteurs, wenn auch Monate lang aufbewahrt, ihre atmosphärische Spannung und vollkommene Leistungsfähigkeit behalten.**

In ähnlicher Weise wurden Versuche angestellt mit Ertincteurs, die kurz vorher gefüllt worden waren und nach 8 bis 10 Minuten eine Spannung von 4 1/2 bis 5 Atmosphären zeigten. Sie dienten zum Löschen von Theer und Petroleum, welche in einer 13 Fuß langen, 1 1/2 Fuß Vertiefung sich befanden und, vollständig brennend, in wenigen Minuten gelöscht wurden.

Nach diesen Versuchen verdienen die Ertincteurs von Schäffer & Budenberg die Beachtung der Landwirth in hohem Grade und würde die unterzeichnete Commission den Leistungen dieser Ertincteurs eine Auszeichnung ertheilt haben, wenn für diese Branche eine solche vorgesehen gewesen wäre.

Darmstadt, am 1. October 1868.

- Dr. C. Thiel, Lehrer an der technischen Schule.
- S. Blumenthal, Maschinenfabrik.
- Max Horstmann, Techniker.

Bei dem am 15. d. M., Abends 8 Uhr, von Seiten des hiesigen freiwilligen Feuer-Lösch- und Rettungs-Vereins angestellten Löschoerfuche mit einer von Schäffer & Budenberg in Buckau bei Magdeburg bezogenen Gasspritze oder Ertincteur (Nr. 4) ergab sich Folgendes:

Auf dem hier vollkommen freiliegenden Felde, der „Tabacksacker“ genannt, war ein Holzgerüst von 20' Länge, 5' Höhe und 3' Breite so aufgesetzt, daß es überall größere Zwischenräume zeigte, welche mit Hobelspähnen, Reiserwerk, Stroh und einzelnen Stäben von Theer- und Wagenschmiertonnen ausgesteckt wurden; am Fuße desselben lagerten fünf Theertonnen und auch das ganze Gerüst war mit Theer stark getränkt. Um 8 Uhr wurde der Holzstoß angezündet, er stand sofort in heller Flamme. Nachdem der Brand circa 5 Minuten gedauert hatte, wurde das Zeichen zum Löschen mit dem Ertincteur gegeben. Der Löschnann trug den Apparat mit 25 Quart Inhalt auf dem Rücken und griff das Feuer von der Seite an, von welcher der Wind kam und löschte den Holzstoß von unten nach oben, umkreiste denselben auch, den kurzen Schlauch in der Hand haltend. Der Brand war in 3 Minuten gelöscht und es zeigte sich bei näherer Besichtigung des Holzstoßes, daß sämtliche Schette auf der Oberfläche angekohlt worden waren. Zu diesem Löschoerfuch war aus dem Apparat nur die Hälfte der Füllung verbraucht worden, so daß, als nach längerer Zeit der Holzstoß wieder in Flammen gefetzt war, dieselben mit dem Reste der Füllung abermals gelöscht werden kann.

Der hier gemachte, recht interessante Versuch, welcher vor den Behörden der Stadt und einem großen Publikum ausgeführt wurde, zeigte somit, daß der Ertincteur mit ausgezeichnetem Erfolge wirkt und sich äußerst zweckmäßig erweist. Es spricht zu seinen Gunsten ferner, daß solcher Apparat nur einen Mann zur Bedienung erfordert, daß derselbe stets schlagfertig ist und von dem Manne, der ihn trägt, an jede brennende Stelle leicht gebracht wird.

Es verdient diese Erfindung somit unzweifelhaft das regste Interesse und es ist die Anschaffung des Ertincteurs nicht nur für öffentliche Gebäude, sondern auch jedem Hausbesitzer, sowie den Besitzern von Fabriken, Dekonomen, der Feuerwehr und Landgemeinden dringend zu empfehlen.

Granden z, den 28. December 1869.

Der Vorstand des Grandenzer freiwilligen Feuer-Lösch- u. Rettungs-Vereins.

- Hnd. Blöthe, Buchhändler.
- F. W. Kaufsch, Zimmermeister.
- Eduard Soke, Kaufmann.
- C. G. Suder,

Kreisgerichts-Sekretair und Agent der Nacher u. Münchener Feuer-Versicherungs-Gesellschaft.

Maschinen- und Dampfkessel-Armatur-Fabrik von
Schäffer & Budenberg in Buckau-Magdeburg.

MANCHESTER, GLASGOW, General-Depôt-PRAG, und WIEN,
 Lower Kingstr. 23. Hopestr. 202. Elisabethstr. 655-1. Opernring 10.

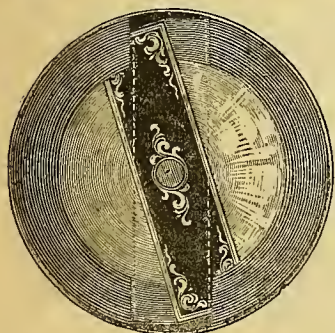
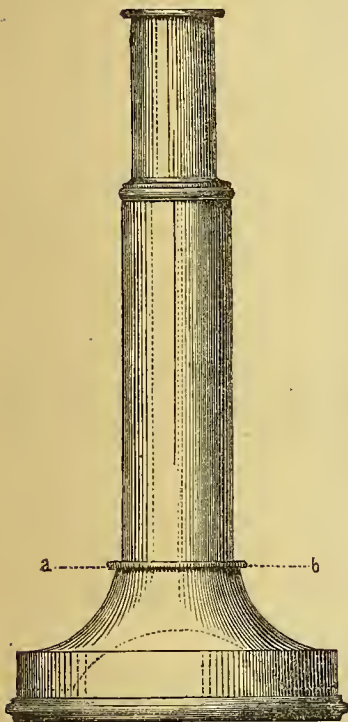
Mikroskope,
sowie mikroskopische Object-Sammlungen

mit erläuternden Broschüren
 aus dem Institute von **Engell & Comp. (Schweiz.)**

General-Debit für das In- und Ausland:

Schäffer & Budenberg in Manchester, Glasgow und Buckau-Magdeburg.

Fig. 1.



Engell's Patent Schul- und Salon-Mikroskop.

Zeichnung stellt dieses Mikroskop in halber wirklicher Grösse dar. Das Mikroskoprohr über der Linie a b enthält Ocular und Linsensystem mit 100facher Linear-Vergrösserung von E. Hartnack (Nachfolger von G. Oberhäuser) in Paris und entsprechen beide an Güte dem hohen Rufe des Genannten auf diesem Gebiete. Der Patent-Objecthalter unter der Linie a b, in welchem dieses Rohr verschiebbar, dient zur Aufnahme und zur Feststellung der Objecte; der in demselben angebrachte Hohlspiegel dient insonderheit zur Beleuchtung opaker Gegenstände, bietet aber neben einer leichten Handhabung auch den Vortheil eines bessern direct von oben auf das Object fallenden Lichtes.

Nachdem das Einstellen des Objects in das Gesichtsfeld des Mikroskop's besorgt ist, kann letzteres von Hand zu Hand wandern und ist nur wie beim Perspective etc. der Lichtquelle zuzuwenden, um das eingelegte Object mit der grössten Deutlichkeit sehen zu können.

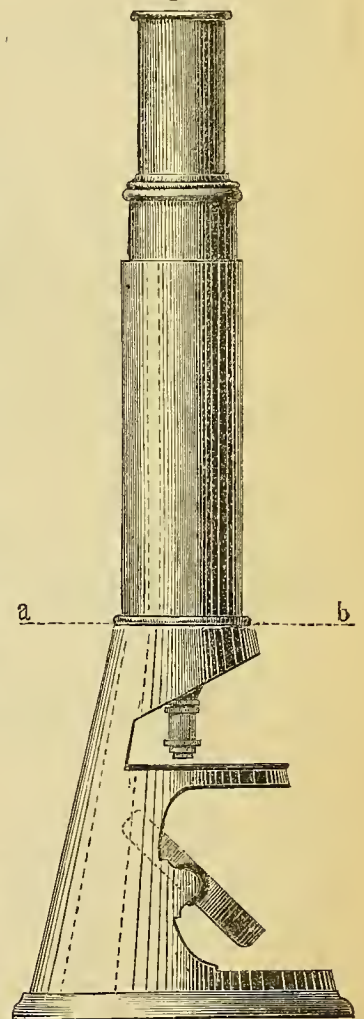
Ist die Lichtquelle sehr stark, so ist es vortheilhaft, den Patent-Objecthalter durch seinen Deckel, nachdem man im Mittelpunkt ein kleines Loch gebohrt, zu verschliessen.

Um dem Mikroskope im Allgemeinen mehr Verbreitung zu verschaffen, ist unser Bestreben dahin gerichtet, für die geringsten Preise möglichst gute Instrumente zu liefern, welche Aufgabe wir durch das bereitwillige Entgegenkommen des Herrn E. Hartnack vollständig erfüllen.

Preis-Verzeichniss

von **Engell's Patent Schul- und Salon-Mikroskop**, welches sich gegenüber den gewöhnlichen, bekannten Constructionen von Mikroskopen durch wesentlich bequemere Handhabung, einfache Einstellung und Fixirung des Objectes, scharfe Beleuchtung und direct einfallendes Licht, von grösstem Effecte auf opake Gegenstände, unterscheidet und auszeichnet. Dem Patent Schul- und Salon-Mikroskop ist noch ein Fuss mit Reflectionsspiegel beigegeben, wodurch der grosse Vortheil erreicht wird, dass man die bei a b Fig. 1 vom Patent-Objecthalter abzuschraubende Mikroskopröhre in der durch Fig. 2 veranschaulichten Weise als gewöhnliches Mikroskop benutzen kann.

Fig. 2.



No. 1 Fig. 1 mit einem Linsensystem von E. Hartnack in Paris, mit 100 facher Linearvergrösserung, nebst Patent-Objecthalter mit Reflectionsspiegel	Thlr. 12.
No. 1 Fig. 2 dasselbe mit Fuss und Reflectionsspiegel, in elegantem Kasten	„ 14.
No. 2 Fig. 1 dasselbe mit 200 facher Linear-Vergrösserung und mit Mikrometerschraube versehen	„ 18.
No. 2 Fig. 2 dasselbe mit Fuss und Reflectionsspiegel, in elegantem Kasten	„ 20.
No. 3 Patent-Objecthalter mit Beleuchtungsspiegel und Gewinde zum Anschrauben an eine vorhandene Mikroskopröhre	„ 3.
No. 4 mit 1 Linse und Reflectionsspiegel	Thlr. 3.
No. 5 mit 2 Linsen und Reflectionsspiegel	„ 5.
No. 6 mit 3 Linsen, Reflectionsspiegel und eine Beleuchtungslinie	„ 7 1/3.

Sogenannte Schweizer Mikroskope.

Mikroskopische Objecte.

I. Systematisch geordnete Sammlung.

Thierreich.

I. Lieferung. 25 Präparate von Urthieren, Strahlthieren und Würmern. Preis 4 Thlr.

- | | |
|--|--|
| 1. Fossile Kalkpanzer von Polythalamien aus dem Kalkmergel von Caltanissetta. | 13. Krystallhaken von Seesternen. |
| 2. Kalkpanzer von Polycystinen aus demselben. | 14. Kalkklappen der Greifzangen von Seesternen. |
| 3. Fossile Polythalamien aus erdigem Kalk der Cava St. Giorgio. | 15. Greifzangen von Seeigeln. |
| 4. Polythalamien, Spongiennadeln etc. aus dem Inhalt des Verdauungskanalns einer indischen Holothurie. | 16. Saugfüsschen von Seeigeln. |
| 5. Waschschwämme. | 17. Haut mit Kalkkrystallen der Seewalzen. |
| 6. Schwamm mit Kieselnadeln. | 18. Kalkgebilde aus der Haut von Holothuriern. |
| 7. Schwamm mit Kieselkugeln und Sternen. | 19. Krystallanker aus der Haut der Synapta. |
| 8. Schwamm mit Kieselrücken. | 20. Schnürchen mit Krystallrädern der Chiro dato violacea. |
| 9. Verschiedene Kieselkrystallgebilde aus Meeresschwämmen. | 21. Eierstöcke von Botrioccephalen. |
| 10. Stück eines Polypenstocks. | 22. Hakenkränze und Haken von Würmern. |
| 11. Haut mit Mundöffnung eines Polypenstocks. | 23. Kolonie von Moosthierchen. |
| 12. Rothe und weisse Kalkspindeln von Polypen. | 24. Eine andere Art derselben. |
| | 25. Kolonie von Flustern. |

II. Lieferung. 25 Präparate von Weichthieren, Wirbelthieren und Gliederthieren. Preis 4 Thlr.

- | | | |
|---|--|------------------------------------|
| 26. Embryonen der Flussmuscheln. | 34. Fuss der Weberspinne. | 42. Mundwerkzeuge einer Bremse. |
| 27. Zungen mit Zähnen und Kiefern der Gartenschnecke. | 35. Hornhaut vom Auge der Biene. | 43. Haut-Schuppen eines Fisches. |
| 28—30. Zungen von Meerschnecken. | 36. Schmetterlingsschuppen. | 44—46. Haare und Haarquerschnitte. |
| 31. Rankenarme einer Entenmuschel. | 37. Stück eines Schmetterlingsflügels. | 47. Knochenschliffe. |
| 32. Magen mit Haarborsten von Krebsen. | 38. Haare einer Erdhummel. | 48. Blutkörper. |
| 33. Spinnenfuss. | 39. Insectenfuss. | 49. 50. Ader-Injectionen. |
| | 40. 41. Mundwerkzeuge von Käfern. | |

II. Neue Sammlung

von Kalk-, Kiesel- und Chitin-Gebilden niederer Seethiere, (nebst erläuterndem Verzeichniss)

die dem bei weitem grössten Theile des Publikums noch völlig unbekannt und selbst in den Museen (mit Ausnahme der grössten) theils nur in wenigen, getrockneten Exemplaren vorhanden sind.

Die Präparate 1—8 enthalten Spongien.

Die Präparate 9—14 enthalten Polythalamien, Polycystinen und Diatomeen.

Die Präparate 15—22 enthalten Polypen.

Die Präparate 23—40 enthalten Echinodermen.

Die Präparate 41—50 enthalten Briozoen, Würmer und Mollusken.

Preise vorstehender 50 Präparate in zwei Grössen:

} a) 1" breit 3" lang	} feine Ausstattung, in Sammetkasten.....	Thlr. 16.
		in Pappkasten.....	„ 12.
} b) $\frac{5}{8}$ " breit 2 $\frac{5}{8}$ " lang	} einfache do. in Sammetkasten.....	„ 13.

III. Pflanzenreich.

12 Stück Präparate Cryptogamen und Phanerogamen, Quer- und Radialschnitte verschiedener Pflanzen in schöner Auswahl, als:

Staubpilze,	Spaltöffnungen,	Krystalle der Pflanzen,	Laubholzquerschnitt,	Torfmoos,	Palmenquerschnitt,
Gefässbündel,	Schachtelhalmsquerschnitt,	Farn-Sporangien,	Pflanzenhaare,	Floridee,	Diatomeen.

Für diejenigen, welche nicht systematische Belehrung auf diesem Gebiete der Naturwissenschaft, sondern mehr mikroskopische Unterhaltung durch Anschauen schöner Präparate suchen, ist die schon seit Jahren von uns verbreitete Sammlung von 24 Objecten aus dem Thier- und Pflanzenreiche zu empfehlen, welche wir

IV. gemischte Sammlung (Preis 4 Thlr.)

nennen, enthält:

- | | |
|---|--|
| 1. Durchschnitt der Haut des Pommeranzschwammes mit seinen Kieselnadeln und Sternen. | 11. Rankenarme von Balanen (Meereicheln). |
| 2. Fossile Diatomeen, Polycystinen und Polythalamien (Kiesel- und Kalkpanzer) die kleinsten organischen Wesen, die einen grossen Theil der Erdrinde bilden. Das Präparat ist für die schärfsten Vergrösserungen geeignet. | 12. Spinnenfuss. |
| 3. Sertularie (Polypenkolonie) frisch aus dem Meere bereitet, um den Bau der Polypen zu zeigen. | 13. Oberkiefer einer Spinne. |
| 4. Kalkkörper der Gorgonien. | 14. Bienenrüssel. |
| 5. Kalkgebilde von jungen Ophiuren (Schlangensterne). | 15. Schmetterlingsstaub. |
| 6. Kalkkörper der Müllerien und Pentacten (Seewalzen). | 16. Stück eines Juwelenkäfers. |
| 7. Anker und Platten der grossen Synapta. | 17. Blutkörperchen eines Wassersalamanders. |
| 8. Bryozoen-Colonie. | 18. Schuppe der Seezunge (Pleuronectes solea). |
| 9. und 10. Schneckenzungen. | 19. Vogelfeder. |
| | 20. Haare des Schnabelthieres aus Neuholland. |
| | 21. Querdurchschnitt des borstigen Haares eines Stachelschweines. |
| | 22. Stück eines injicirten Dünndarms, od. Balsaminen-Gefässbündel. |
| | 23. Querdurchschnitt eines Lindenzweiges. |
| | 24. Gefässbündel aus Pflanzen. |

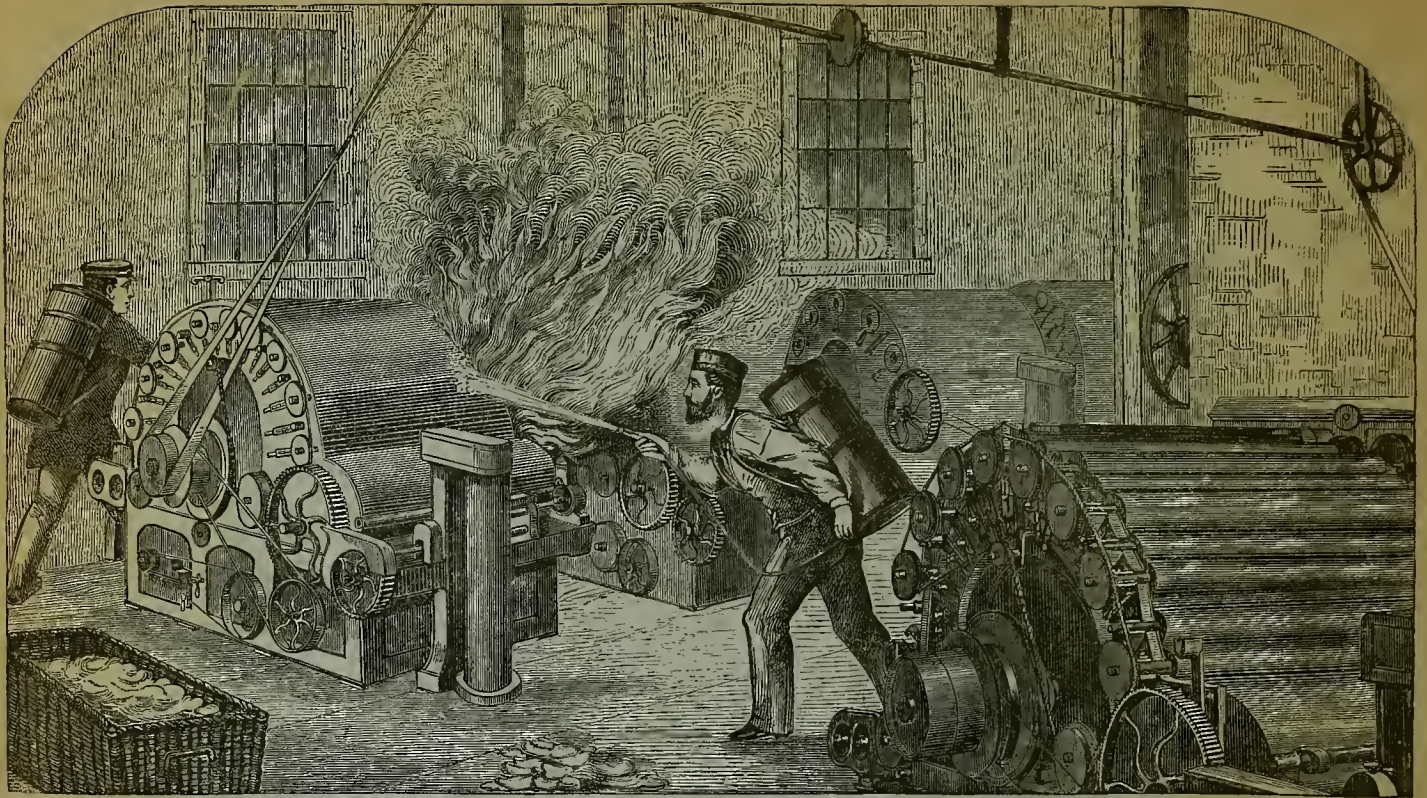
V. 25 Präparate aus dem Thierreich, opake Ader-Injectionen, vorzüglich schön ausgeführt vom Professor Frey. (Preis 5 Thlr.)

VI. Objecte, einzeln zu beziehen. Dieselben sind in den obigen Sammlungen nicht enthalten, zeichnen sich aber durch Seltenheit und besondere Schönheit aus, als:

Seeigel.	Spongien, Kieselnadeln.	Gorgonien.	Diatomeen von Anniata.
Polycystinen von Barbados.	Liturina, Schneckenzunge.	Spinnenfuss, prächtig.	

(Preis pro Stück 10 Sgr.)

 **Trichinen-Präparate** (à Stück $\frac{1}{3}$ Thlr.) 



Löschung eines Brandes

bei

Rattray & Simpson in Preston

vermittelt der

Patent - Gasspritze (Extincteur.)

Siehe Tafel XIX.

Schäffer & Budenberg in Buckau-Magdeburg.



1876



PIANOFORTES



STEINWAY & SONS

New York

STEINWAY & SONS,

Manufacturers of

GRAND, SQUARE AND UPRIGHT



Warerooms,

STEINWAY HALL,

Nos. 107, 109 & 111 EAST FOURTEENTH STREET,

BETWEEN UNION SQUARE AND IRVING PLACE,

NEW YORK.

Factory,

FOURTH AVENUE, FROM FIFTY-SECOND TO FIFTY-THIRD STREET,

NEW YORK.

SAW MILL, IRON FOUNDRY, AND METAL WORKS, ASTORIA, L. I.,

OPPOSITE ONE HUNDRED AND TWENTIETH STREET, NEW YORK.

INDEX.

	PAGE
Introduction, - - - - -	1
Description of the Inventions patented by Steinway & Sons, - - - - -	7
List of Pianofortes exhibited by Steinway & Sons at the Centennial Exhibition, at Philadelphia, 1876, - - - - -	19
List of Articles, Castings, Piano Hardware, etc., made in Steinway & Sons' Foundry and Metal Works, at Astoria, Long Island, and exhibited by them in the Machinery Hall of the Centennial Exhibition, Philadelphia, 1876, - - - - -	20
Description of the Pianoforte Manufactory of Steinway & Sons, - - - - -	21
Description of the Saw Mill, Iron and Brass Foundries, and Hardware Works of Steinway & Sons, at Astoria, Long Island, -	23
Description of the Warerooms and Concert Hall of Steinway & Sons, - - - - -	25
History of the firm of Steinway & Sons, - - - - -	27
Medals, Awards, and Honorary Distinctions conferred upon Steinway & Sons, - - - - -	30
The American Piano Trade, - - - - -	37
Alphabetical List of Eminent Musical Artists who have used and prefer to use Steinway & Sons' Pianofortes, - - -	38

MARTIN B. BROWN,
Printer, &c.,
201 WILLIAM STREET, N. Y.

INTRODUCTION.

THE Centennial Exhibition of 1876 marks a grand and ever to be remembered epoch in the history of America.

Inaugurated with the view of celebrating in a fitting manner the one hundredth year of our existence as a Nation, under permanent Republican institutions, it affords us the opportunity of displaying to the world at large the progress we have made in all those arts, sciences and manufacturing industries which appertain to advanced civilization, in friendly competition with the older nations of the world whom we have invited to join us in this our national celebration.

That the Centennial Exhibition will stimulate and develop every department of manufacturing industry admits neither of doubt nor question; it will, however, do more, for it will furnish us a comparative test by which we may judge of our own progress in comparison with that of other nations, inciting us to renewed efforts in the future to achieve the palm of excellence in all those industries to which we give our attention, our inventive skill, and our enterprise and in which we invest our capital.

In participating in the Centennial Exhibition it cannot be deemed inappropriate if we give a summary of the active share which the firm of STEINWAY & SONS has taken in that special branch of art manufacturing industry which appeals directly to all the gentler influences, the kindlier feelings and associations of our nature, inseparably connected with "Home!"—in which magic circle it is most honored, and where its humanizing and soothing effects are best felt, understood and appreciated—need we say the "Pianoforte!"

For the elevation and development of that class of music, ever so genially acceptable and intrinsically valuable in the home circle, America is indebted to Europe for the medium in the form of the "Pianoforte," to which so great an ennobling, educating and progressively fascinating mission was entrusted.

The general prosperity of the citizens of America, the rapid growth of their taste for, and appreciation of the good and beautiful in art, favored its introduction into the Western Hemisphere at a comparatively early date. But in a short space of time the trying climate of North America exhibited its influence upon the imported European piano. The vast continent of North America, in its interior, suffers from the destructive effects of the ever recurring dry land winds, whilst the populous sea-coast districts are in constant receipt of the moist sea-breeze. Europe—where the climate is comparatively uniform and which is not liable to such abrupt and violent changes of temperature—had constructed instruments in accordance with its own climate, but which were not calculated to withstand that of America, and therefore, as a natural consequence, soon became useless in this country. Again, the great distance between the settlements, scattered over so vast an extent of territory, rendered it not only costly, but next to impossible to effect the repairs, which were essential every now and then, in order to keep the instrument in anything approaching to playable condition. In the interior of the States, this difficulty was increased by the lack of workmen who sufficiently understood the art of piano making so as to repair and tune instruments. As an inevitable consequence, pianos became articles of luxury, accessible only to the wealthy.

The best European instruments only found a ready market in this country, and the pianos of a few celebrated firms of London and Paris, to whom the art of piano making is so deeply indebted, were regarded as the standard instruments in the Western world until the third decade of the present century. But even such instruments as named were imported only in small numbers, gradually decreasing, for the cogent reasons stated, until finally the importation ceased. At this period the manufacturing of pianos of a

more substantial character commenced in America, and the inventive genius of the country was applied in the effort to achieve durability as well as perfection in tone; those efforts being continuous from year to year, until the successful results, as exhibited in the present instruments of the celebrated American manufacturers, were attained.

Until the commencement of the present century, the attempts at pianoforte making in the United States were few, and the results achieved without any practical significance. From the year 1825 the first steps of improvement in American piano making may be traced. In that year the first attempts were made to give the body of the instrument more durability and increased power of resistance against the pull of the strings, by the application of a full frame of cast iron* in place of wood. These experiments were naturally first tried on square pianos, as those instruments were the most used, and almost exclusively manufactured in America.

In a brief synopsis like this, the object of which is to describe the enormous dimensions to which the manufacture of pianos in the United States has arrived, only those inventions can be mentioned which, by their practical value, have aided materially in the development of this branch of art industry. It must be mentioned, however, that a careful search of the records of the United States Patent Office has revealed the fact of a large number of most interesting inventions to have been filed, which, though impracticable in themselves, go to prove, that for years there has existed a constant and earnest endeavor to improve the manufacture of pianofortes in America.

In the year 1825 Alpheus Babcock of Philadelphia, obtained a patent for the construction of a cast-iron ring, somewhat resembling the shape of a harp, in a square piano, for the purpose of increasing its power of resistance to the pull of the strings. By this invention, the principle was first practically introduced of casting the iron hitch-pin plate, together with that portion which supported the wrest-plank, *in one piece*.

In 1833 Conrad Meyer of Philadelphia, exhibited at the fair of the Franklin Institute in that city a square piano, which was constructed with a full cast-iron frame, substantially the same as used at the present time.

The introduction of this full iron frame was aided to a

* The attempt to employ iron for the purpose of giving more power of resistance to the pull of the strings was made about five years earlier in England. In 1820 James Thom and William Allen obtained a patent (No. 4431) for an improvement in pianofortes: "To use iron plates, supported by a number of bars (metal tubes), against the pull of the strings." Stodard, of London, was the first to use this patented construction in one of his grand pianos.

great extent by the excellence of the quality of American iron and the perfection which the art of casting had already attained at that period. The fact was indisputable, that the pianos thus made stood better in tune than those previously constructed; but one great defect was their thin and disagreeably nasal character of tone. For these salient reasons, the new invention soon had quite as many opponents as admirers, so that, until the year 1855, a large majority of the American manufacturers made no attempt to use it. Its opponents were especially numerous in New York, where prior to this year, as can be authentically proved, not one of the prominent makers used the full iron frame in the construction of their instruments. All the pianofortes manufactured in Boston at that time had a full cast-iron frame, the wrest-plank bridge being a portion of the same. Across the acute edge of this iron bridge the generally exceedingly thin strings were laid, and the action used in these pianos was, without exception, what is styled "the English action." In New York, on the contrary, the instruments made were provided with a small cast-iron hitch-pin plate and the "French action," and they differed from the Boston pianos in possessing a much fuller and more powerful, though at the same time less "singing" quality of tone.

The New York piano makers achieved in their instruments the capacity of standing in tune more permanently than had been previously accomplished, by greater solidity of construction and a heavy bracing of the case, and more particularly by the use of a solid bottom or bed (of a thickness of fully five inches), which, however, to some extent marred the elegant appearance of the instrument. By degrees a new difficulty manifested itself in the instruments thus made, for, as their compass gradually extended and finally reached seven, or seven and one-third octaves, it was found impossible to obtain the necessary power of resistance against "the pull" of the strings, even by the most solid construction of the case, when wood alone was the material used.

It therefore became necessary to apply the iron frame, but in such a manner as to avoid the deleterious influence previously ascribed to it as so objectionable, in order that the piano might lose none of its fullness and power of tone.

This successful result was first achieved by the firm of STEINWAY & SONS of New York, who, in 1855, constructed a piano with a solid front bar and full iron frame, the latter covering the wrest-plank, the wrest-plank bridge, however, being made of wood. The brace, which in the treble connected the "hitch-pin plate" with the wrest-plank plate,

was slightly elevated above the strings, and ran in a different direction to the latter, namely, exactly to the angle at which the wrest-plank had to sustain the pull of the strings. The bridges of the sounding-board were grouped in such a manner, that they were moved considerably nearer to the middle of the latter, and at the same time the lineal length of these bridges was increased by placing the bass strings of the instrument over the others—or overstringing them—over three nearly parallel bridges, thus increasing the length of the latter over the sounding-board, viz.: from forty to sixty-eight inches, their position being removed from the iron-covered edges of the case, nearer to the centre of the sounding-board. The results achieved by this novel construction were in every way most successful. The first instrument made on this plan received, by a *unanimous* verdict of the jury, the first prize, a gold medal, at the exhibition of the American Institute, at the Crystal Palace in New York in 1855. This new method of construction very soon became the standard for all manufacturers in that and other cities, and, as far as can be ascertained, all square pianos manufactured in the United States at the present time are, to a greater or less extent, constructed in accordance with this system.

In 1859 an improvement of great importance was made in square pianos by STEINWAY & SONS, and patented by them. This consisted of an iron frame with a downward projection, which ran parallel with the wrest-plank bridge, abutting against the same, thus giving it an extraordinary degree of firmness and solidity. Into this projection the “agraffes” were screwed—this being the first successful application of the agraffes to the treble of a square piano (see description of this patent, page 7.) This application of the agraffes only became practically possible after the invention by STEINWAY of a drilling machine peculiarly constructed to achieve the object in view. This new agraffe arrangement was used in all grand and the highest priced square pianos manufactured by STEINWAY & SONS, and subsequently in *all* their square pianos.

The grand piano, beyond a doubt the most perfect and magnificent of the three ordinary species of pianofortes, had, up to a comparatively recent period, received but little attention from either the manufacturers or public of the United States—in fact, not until towards the year 1840. The sale of a grand piano was an event of rare occurrence, and European pianists visiting the United States almost invariably brought their concert instruments with them. The demand for grand pianos was so limited indeed, that STEINWAY & SONS, prior to the year 1856, did not deem it

advisable to give a new impulse to this class of instruments, by commencing its manufacture. The first grand pianos made by them were constructed with a straight-stringed scale and full iron frame, a treble piece of brass or iron, and with agraffes in the middle tones and the bass, screwed in the wood. These grand pianos soon became extensively popular, and were so favorably regarded by professional artists and the public, that they were at once brought into extensive use in the concert room, and large numbers of them were made and sold.

The firm obtained, subsequently, several patents for grand piano actions and improvements; but the most important improvement of all, in the construction of these instruments, was patented by STEINWAY & SONS on the 20th of December, 1859. This improvement consisted of the introduction of a complete cast-iron frame, the projection for the agraffes *lapping over* and *abutting against* the wrest-plank, together with an entirely new arrangement of the strings and braces* of this iron frame, by which the most important and advantageous results were achieved. The strings were arranged in such a position, that in the treble register their direction remained parallel with the blow of the hammers, whilst from the centre of the scale the unisons of the strings were gradually spread from *right to left*, in the form of a fan, along the bridge of the sounding-board, the covered strings of the lower octaves being laid a little higher and crossing the other ones (in the same manner as the other strings), and spread from *left to right* on a lengthened sound-board bass bridge, which ran in a parallel direction to the first bridge. By this arrangement several important advantages were obtained. By the longer bridges of the sounding-board a greater portion of its surface was covered—the space between the unisons of the strings was increased, by which means the sound was more powerfully developed from the sounding-board—the bridges, being moved from the iron-covered edges nearer to the middle of the sounding-board, produced a larger volume of tone, whilst the oblique position of these strings to the blow of the hammers resulted in obtaining those rotating vibrations which gave to the thicker strings a softness and pliability never previously known. The new system of bracing was also far more effective, and the

* Whenever the overstrung system was experimented with before STEINWAY'S successful invention, it was done in the following manner: Instead of *spreading* the strings, they were even crowded more closely than in the old straight-scale instruments, or by combining the straight scale and diagonal system upon two separate sounding-boards, as was done in the grands of Lichtenthal, St. Petersburg, and uprights of Pape, Paris. Neither the one nor the other had the slightest similarity with STEINWAY'S construction, and neither met with success.

power of standing in tune greatly increased (see description at page 8).

The first grand piano constructed in this novel manner was played on, publicly for the first time, at the New York Academy of Music, on the 8th of February, 1859, and created a great and marked sensation. As early as 1861, grands of this construction were played in public in Germany by some of the most distinguished European artists, who have always preferred them for use in concerts; and, moreover, several intelligent manufacturers began to copy the novel construction of these instruments. STEINWAY & SONS exhibited at the London World's Fair, 1862, both kinds, grand and square instruments, and were awarded a First Prize Medal by the International Jury for *powerful, clear, and brilliant* tone, with excellence of workmanship, as shown in the pianos exhibited. Some intelligent European, as also American makers, now began to prefer this so-called "STEINWAY overstrung" or "American system" (both terms are synonymous) to the older systems with straight-stringed scale. The undoubted results achieved, viz.: increased volume of tone and far greater durability, even in the imitations of the new system, emanating from makers and cities almost previously unknown in the annals of this branch of art industry, were well calculated to awaken the highest interest among experts for and in the revolution which manifested its progress in the art of piano making, and which thus far extended only to the two kinds of instruments that have been named. As is sufficiently well known, the square piano has been completely superseded in Europe by the grand and upright.

Later, STEINWAY & SONS turned their attention to the improvement of the upright piano. The principles which had been of such intrinsic value in the grand pianos, were now, 1862, applied to the upright, in the short, broad and compact case of which this system produced far greater and more immediately apparent results.

In the course of the same year, upright pianos of this construction were exported by STEINWAY & SONS to Germany, where they at once were recognized as models worthy of imitation, and several such imitations were noticeable at the Paris Exposition, where, however, the instruments, with the apparatus for compression of the sounding-board, as exhibited by STEINWAY & SONS, excited special attention.

We now approach the great International Exposition of Paris in 1867.

Here we find many German, Swedish, and Russian makers, as allied to and identified with the STEINWAY system,

of which they exhibited a number of instruments. On the other hand, there were old and honorable firms—the founders of which had long departed this life—holding fast to the traditional principles of the old straight scales in grand pianos, and the oblique scale in uprights. Here, then, for the first time, we find the old and new systems in open competition; the first mentioned supported by influence and means, which the latter could not command, or which were scorned by its representatives.

Paris was precisely the field where anything uncommon, extraordinary and foreign, in opposition to customary and home productions, could successfully be fought, and every inch of the ground was fiercely contested. "The Gazette Musicale" published numerous articles with this tendency; illustrated comic journals represented the STEINWAY system as a bomb-shell, harmlessly bursting in the skies. That this could not be effected without great expenditure of money, must be apparent to everybody acquainted with the character of the press in the Metropolis of all Civilization.

In the meantime, the representative of STEINWAY & SONS had to restrict himself to describing their new, and to the majority entirely unknown, method of construction, to elucidating it by illustrations, and to furnishing the proofs that their improvements were based upon physical and acoustical laws. He submitted to the jury an apparatus which proved by experiments that a string develops the finest tone if strained as near as possible to the limit of elasticity, because at that point it gives the most vigorous transverse vibrations; and further he demonstrated, that the compression of the sounding-board matter, from the edges to the middle, results in an increased gradation of molecular vibrations, materially heightening the energy of tone, and its ready or prompt response and development. Even so distinguished a musical critic as the celebrated Fétis could only with extreme reluctance overcome the prejudice, that strings laying over and above each other must necessarily intermingle with and disturb each other's vibrations. He (Fétis), with great reserve, awaited the opinions and the judgment of celebrated physicists, until, finally, it became clear to this great mind, that strings laying over and above each other disturb each other as little as those laying side by side; the laws of acoustics, when applied to the disposition of strings, know neither "above" nor "below." However, the preparations of a combination for the purpose of prejudicing the jury and public opinion against the STEINWAY system were not as effective as those who had formed it had every reason to expect. Inde-

pendent experts,* whose attention had been awakened by the wrangling of the opposing party, far more distinguished by foolish fanaticism than by scientific arguments, determined one after the other to make self-dependent examinations, which completely turned the tide of opinion in favor of the STEINWAY system.

The merit of having reversed this current in our favor belongs to Gustav Doré, the celebrated painter and distinguished musical amateur; at his request, one of STEINWAY & SONS' overstrung grands was sent to his residence, in the Faubourg St. Germain, for use at one of his musical soirees, at which several of the most eminent artists assisted. From that moment the "Grand pianos Américains croisés" were seen and heard in the highest aristocratic circles and most artistic reunions of the French capital.

They journeyed from palace to palace, they were purchased by the richest of the rich; Baroness de Rothschild, among many others, bought one for the family castle, "Ferrières." Our limited space does not permit us to fully detail the extended recognition and admiration which they gained and elicited wherever they were heard.

A List of Awards and Honors, received by STEINWAY & SONS, will be found appended to this pamphlet.

The International Jury of the Paris Exposition awarded to the firm of STEINWAY & SONS the "First" of the Grand Gold Medals, and in their report placed it at the head of all awards, according to merit, made to American musical instruments. †

In 1867, during the Paris Universal Exposition, STEINWAY & SONS caused to be circulated many thousand copies of

* HECTOR BERLIOZ, the celebrated French Composer and acknowledged highest authority on *Effects of Sound and Instrumentation*, recognizes the progress in the following letter:

PARIS, September 25, 1867.

Messrs. STEINWAY & SONS, Piano Manufacturers, New York:

I have heard the magnificent pianos you brought from America, and which emanate from your factory. Permit me to compliment you upon the excellent and rare qualities which these instruments possess. Their sonority is splendid and essentially noble; moreover, you have discovered the secret to lessen, to an imperceptible point, that unpleasant harmonic of the minor seventh, which heretofore made itself heard on the eighth or ninth node of the longer strings, to such a degree as to render some of the most simple and finest chords disagreeable (cacophonique). This improvement is a great progress among the various others you have introduced in the manufacture of your pianos—a progress for which all artists and amateurs gifted with delicate perception must be infinitely indebted to you.

Accept, I beg of you, with my compliments, my highest respects.

Your devoted,

HECTOR BERLIOZ.

† The Boston and Paris representatives of the old straight-scale systems were later and personally held harmless, by an imperial act of mercy, in granting to them the Legion of Honor, the significance of which is not under discussion for the present, nor had it any connection with the awards of the jury.

an illustrated pamphlet, in the English, German and French languages, wherein they described minutely and in detail their system of manufacture, with the addition of drawings of their inventions and patents.

Inasmuch as the STEINWAY Pianos then on exhibition in Paris excited the admiration of all connoisseurs, by their great volume and beautifully sympathetic quality of tone, by their extraordinary capacity of standing in tune and unchangeableness, it must be self-evident that the pamphlet alluded to was eagerly sought after and universally read with the greatest interest. To the numerous reporters of every nationality, who at the time congregated at Paris, it proved a real gold-mine; its contents, with the drawings, were embodied almost unchanged in their printed reports on the Exposition, and in this connection it is more especially to be mentioned that Doctor Hanslick, of Vienna, in a book he published on "Musical Instruments at the Paris Exposition of 1867," took occasion to recommend to Austrian pianoforte makers the STEINWAY overstrung grand and upright pianos as models worthy of imitation.

Somewhat later, Doctor Oscar Paul, Professor at the University of Leipzig, wrote a work on "History of Pianoforte Manufacture," in which he reproduces the STEINWAY scales, their iron frames, and their apparatus for the compression of the sounding-board. After a searching and exhaustive analysis of previous achievements in this branch of art, Doctor Paul arrives at the conclusion that solely and exclusively to the STEINWAY system belongs the future.

The Government of Wurtemberg appointed a commission to the Paris Exposition, composed of piano-makers, residents of Stuttgart, for the purpose of purchasing the best pianos exhibited, the instruments so acquired to be placed in the Royal Industrial Museum, with the view of their serving as models in this branch of industry in the kingdom. After thorough examination of *all* pianos on exhibition, the commission selected a STEINWAY grand and STEINWAY upright piano.

In the year 1873, we find among the members of the Jury at the International Exhibition at Vienna for Group XV. Professor Hanslick appointed from Austria, Doctor Oscar Paul from the German Empire, and J. Schiedmayer, Royal Counselor of Commerce, appointed from Wurtemberg. These gentlemen found exhibited at Vienna, as a result of their commendations persistently made since 1867, in the numerous productions of the art of piano-making there exhibited as many experiments to imitate the STEINWAY pianos; the respective makers either endeavoring to

copy them as exactly as possible, or taking the leading principle as foundation and adapting the system according to their own ideas and intentions, or to the requirements of their respective markets. To all those who were conversant with and aware of the bitter opposition at Paris, the fact was a great surprise that many of the best French makers appeared at Vienna as exhibitors with very respectable imitations of the STEINWAY system.

In the autumn of 1873, STEINWAY & SONS had the unexpected pleasure of receiving a communication from Doctor Oscar Paul, wherein it was stated that the influence of our inventions upon the entire art of piano-making, as represented in the exhibition at Vienna, had been so manifest and self-evident that the Jury, of which he (Doctor Paul) was the reporter, had vividly regretted that the firm of STEINWAY & SONS was missed among the exhibitors, and that the Jury had felt it their duty to adopt the following resolution and embody it in their minutes :

ORIGINAL.

“Hinsichtlich der Amerikanischen Abtheilung ist sehr zu beklagen, dass die berühmte bahnbrechende Firma STEINWAY & SOEHNE, in New York, welcher die gesamte Clavierfabrikation so viel zu verdanken hat, nicht vertreten war.”

TRANSLATION.

(LITERAL.)

“In regard to the American division, it is much to be deplored that the celebrated path-inaugurating (path-breaking) firm of STEINWAY & SONS, of New York, to whom the entire piano manufacture is so greatly indebted, has not been represented.”

MAESTRO PETRELLA, PRESIDENT, - - -	ITALY, - - -	} Jury on Musical Instruments, Vienna World's Fair, 1873.
HERR DUMBA, FIRST VICE-PRESIDENT, - -	AUSTRIA, - - -	
PROFESSOR DR. LISSAJOUS, SECOND VICE- PRESIDENT, - - - - -	FRANCE, - - -	
SALVATORE MARCHESI, - - - - -	ITALY, - - -	
DR. EDWARD HANSLICK, - - - - -	AUSTRIA, - - -	
F. CERVENY, - - - - -	BOHEMIA, AUSTRIA,	
JOHANN HERZFELD, - - - - -	HUNGARY, AUSTRIA,	
JULIUS SCHIEDMAYER, - - - - -	GERMANY, - - -	
LUTHIER GALAIT, - - - - -	FRANCE, - - -	
DE SORIANO FUERTES, - - - - -	SPAIN, - - -	
MONS. REINKENS, - - - - -	BELGIUM, - - -	
DIRECTOR WEBER, - - - - -	SWITZERLAND, - -	
LA ROCHE, - - - - -	RUSSIA, - - -	
DR. OCSAR PAUL, PROFESSOR OF THE UNIVERSITY OF LEIPZIG, OFFICIAL REPORTER.		

We confess, that having on this occasion kept aloof from competition, we had not the remotest idea of being mentioned, much less could we anticipate receiving so flattering and honorable a distinction. But in connection therewith, the following facts must be taken into consideration :

Of the pianos awarded prizes in Vienna, by far the largest majority were constructed upon the STEINWAY overstrung

system, and the jurymen above mentioned found that they had accomplished what they had striven for and advocated ever since the Paris Exposition, in the interests, well understood and appreciated by them, of European art industry.

Under these circumstances, is it surprising that these gentlemen felt like giving a flattering testimonial to those who had rendered such an advance in Europe possible by making public in the most liberal manner all their manufacturing secrets ?

Doctor Edward Hanslick, as juror, wrote in his report, published in the “Exposition Gazette,” and after a thorough inquiry and description of all samples of our art industry there exhibited, as follows, viz. :

“But not only by his absence does STEINWAY shine in Vienna, but in a more real manner, viz., by his influence upon the entire European pianoforte manufacture. His overstrung system is now so universally adopted that we not only find the majority of the German and Austrian pianos constructed after STEINWAY, but also those of Spain, Italy, Sweden, and Russia, and even the distinguished firm of Pleyel of Paris has laid aside its old-time aristocratic reserve, and has humbled itself by adopting the new system.

“Of the pianos exhibited in Vienna, more than two-thirds are strung like STEINWAY’S ; to this portion, all countries have contributed excepting England, which is but sparingly represented, and Belgium.

“We do not mean to intimate that we see solely in the overstrung system the salvation of the piano manufacture. In order to reach the volume of tone and solidity of STEINWAY’S grands, other most essential requisites are necessary. Manufacturers may work or finish à la STEINWAY, first-class in every respect, or cheaply ; of both kinds our exhibition furnishes sufficient proofs.

“But there remains the fact of the conquering influence of STEINWAY’S piano construction, which has taken root quicker and more universally than any other effectual reform in the manufacture of pianos. It is, indeed, impossible to speak in detail of the pianos in our exposition without referring to STEINWAY, and if we cannot show any genuine STEINWAY pianos to strangers visiting the exhibition, we can answer the stereotype question, Where is STEINWAY? by replying, *Hic et ubique*—everywhere, in the pianos from all countries of the globe.”

DR. EDWARD HANSLICK.

Vienna, August, 1873.

DESCRIPTION OF THE INVENTIONS PATENTED BY STEINWAY & SONS.

THE firm of STEINWAY & SONS was established in March, 1853, and the reason why it assumed such gigantic proportions in comparatively so short a space of time, which, under the control of one single mind would have been absolutely impossible, may be ascribed to the fortunate circumstance that HENRY STEINWAY, the father, educated his five sons as thoroughly practical piano-makers, and soon made them his efficient co-operators.

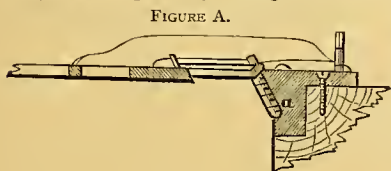
In the three surviving brothers were found united, in a high degree, just those capacities which are so eminently essential for conducting so vast an establishment. To one is assigned the exclusive direction of the purely mercantile and financial affairs of the firm ; another devotes his whole time and energy to the manufacturing interests, to the supervision of the machinery department, and to the purchase of materials and factory supplies in general ; while the third gives his exclusive attention to the development of new theoretical ideas, to novel experiments in the construction of pianos, and to acoustical and scientific researches. We have here the most judicious distribution of work, and a harmonious co-operation for one single purpose, aim, and end, so that unusual and extraordinary success was not to be wondered at.

In this way and manner only was it possible to produce such models and works of art, and to make the STEINWAY piano a perfect physical instrument, capable of producing musically the grandest and most beautiful tones of even shade and volume throughout the scale, from the lowest to the highest notes. Imitations have frequently been attempted without, however, approaching the high degree of perfection of the STEINWAY piano, requiring, as it does, a most thorough knowledge of physical and acoustic laws, and the practical application thereof.

The principal characteristics of this original system—now universally known as the “STEINWAY,” or “overstrung,” or “American” system—are described in the following patents (No. 1-14), which apply to the three different styles of pianos, viz.: the grand, square and upright instruments.

No. 1—PATENT AGRAFFE ARRANGEMENT, APPLIED TO ALL SQUARE AND GRAND PIANOS.

The full iron frame is so constructed that it overlaps and abutts against the wrest-plank body, by means of a projection specially designed for that purpose ; into this projection the agraffes (through which the strings pass) are screwed. The cut (figure A) shows the transverse section of that part in the iron frame covering the wrest-plank referred to ; *a* is the projection with the agraffe in position. The iron frame can thus resist the pull of the strings in every direction and an extremely pure and sympathetic tone results, together with great durability.



Overstrung scale in square pianos, invented by STEINWAY & SONS. The first piano so constructed was exhibited by them at the Crystal Palace, New York, 1855, and awarded the First Gold Medal.

FIGURE B.

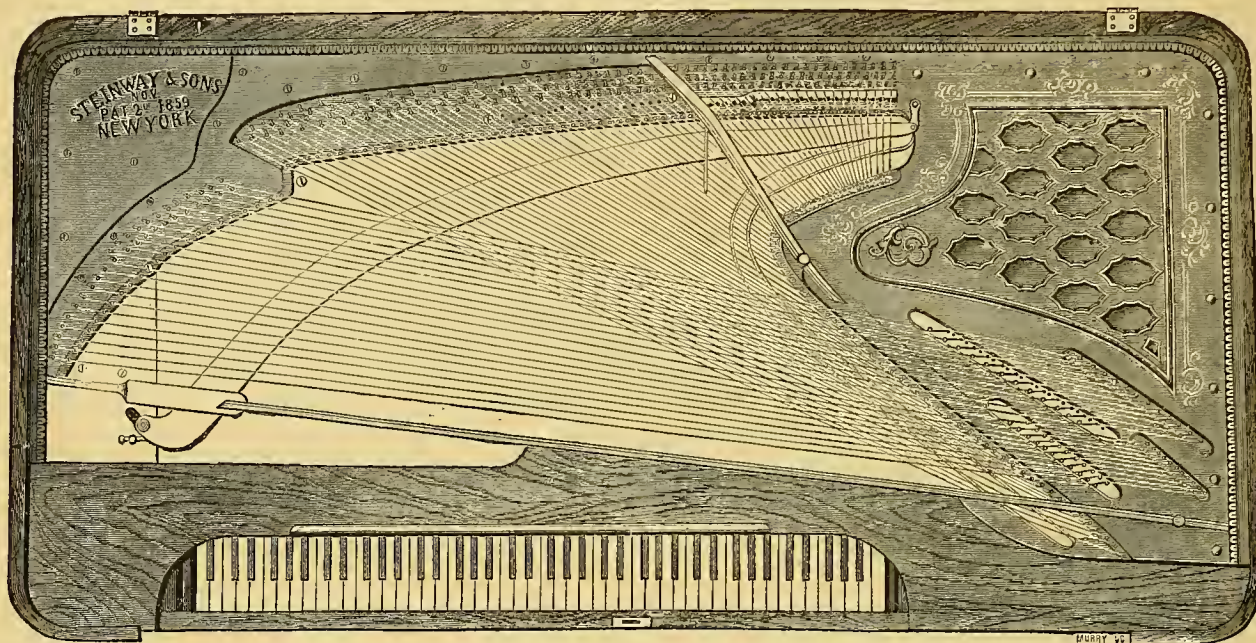


Figure B shows the construction of the iron frame, with overstrung scale and the agraffe arrangement throughout the entire length. Secured by letters patent No. 26300, dated November 29, 1859.

Shows also the duplex scale applied to the treble, described more fully in Patent No. 10.

No. 2—PATENT CONSTRUCTION IN GRAND PIANOS AND THE OVERSTRUNG SCALE.

These inventions have already been fully described in the introduction of this pamphlet. Suffice it to add here a few words as to their originality and marked influence upon the art of piano making.

The first overstrung STEINWAY grand piano had been played upon in concerts before the patent was secured; but never before had there been constructed either a grand or upright piano with strings laying over and above each other in the shape of a *fan*, and with such a judicious combination of straight and oblique iron braces, which gave to this system, although the pull of the strings was considerably increased, a strength of construction never previously attained.

The more important advantages of this system lay principally in the lengthened bridges, and their being shifted away from the edges of the case towards the middle of the sounding-board, whereby larger spaces between the strings were obtained and greater surfaces of the sounding-board brought into vibratory action; the result being, a larger volume of tone and a far richer quality.

FIGURE C.

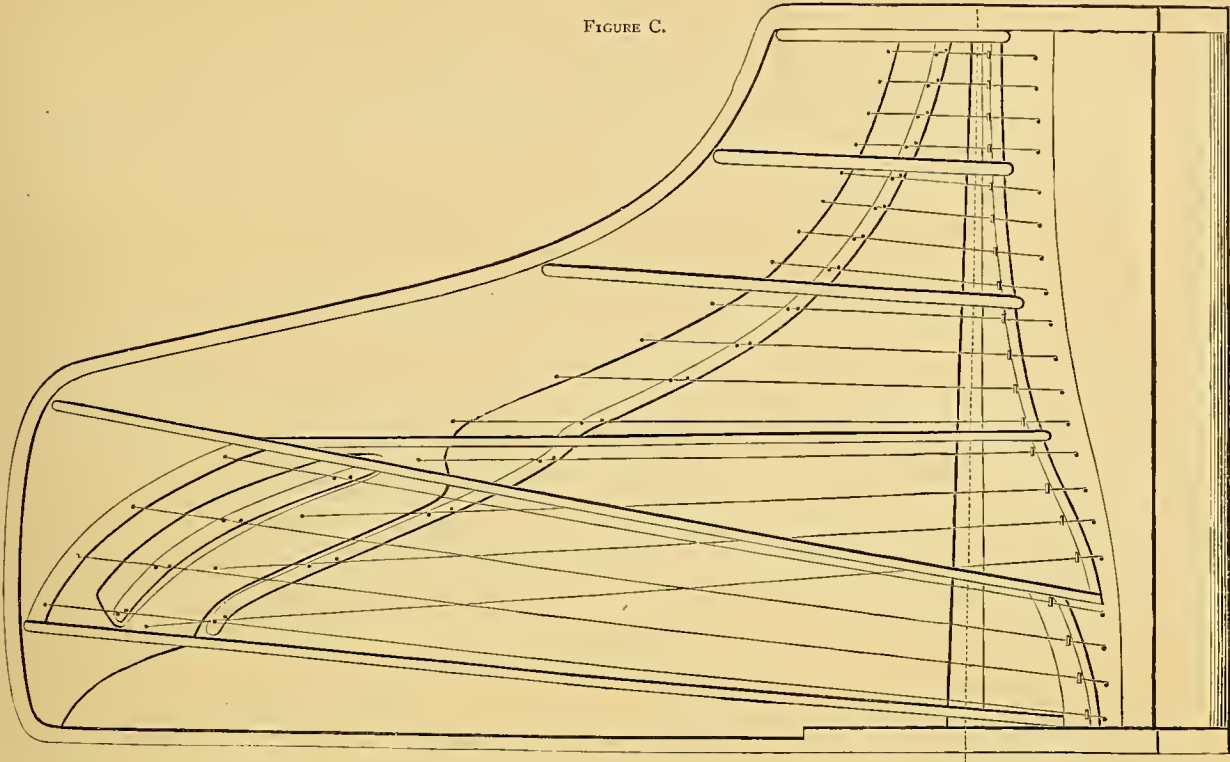


Figure C represents the original drawing in STEINWAY & SONS' patent for the overstrung scale, and the disposition of the strings in the form of a fan. Secured by letters patent No. 26532, dated December 20, 1859.

FIGURE D.

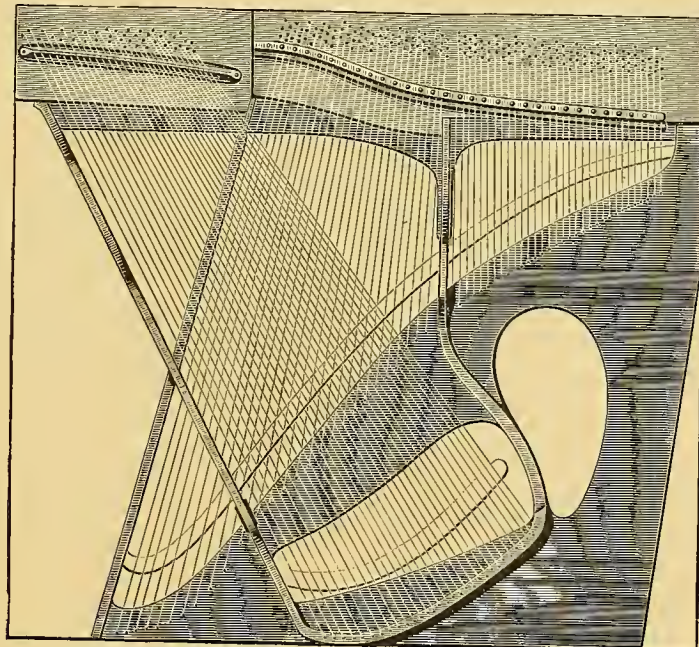


Figure D shows the overstrung scale (with bass strings spread over the others in fan-like shape) as used in upright pianos in 1862, invented by STEINWAY & SONS, and imitated by nearly all European and American manufacturers.

No. 3—PATENT RESONATOR, APPLIED TO ALL GRAND AND UPRIGHT PIANOS.

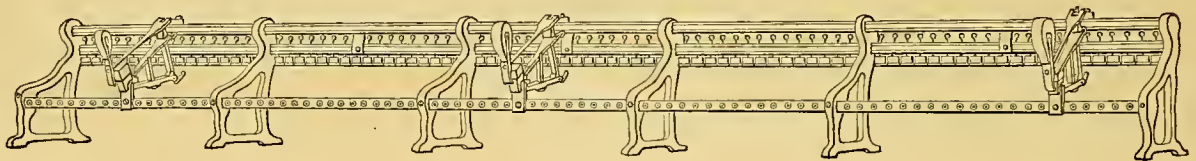
It serves the purpose of compressing at will the edges of the sounding-board, whereby the tension of the same can be very minutely regulated, at the same time placing the sounding-board permanently under control. Secured by letters patent No. 55385, dated June 5, 1866.

No. 4—PATENT TUBULAR METALLIC ACTION FRAME, APPLIED TO ALL GRAND AND UPRIGHT PIANOS.

Instead of the wooden bars which formerly supported the action, and which were liable to atmospheric influences, we now use for that purpose brass tubes filled with wood. This combination of metal and wood is of immense strength and absolutely unchangeable. These tubes are soldered to metal hangers in upright actions, and to metal standards in the grand piano actions. The hangers are secured by special claim in the same patent, while the standards are included in patent No. 93647, hereinafter described as No. 6.

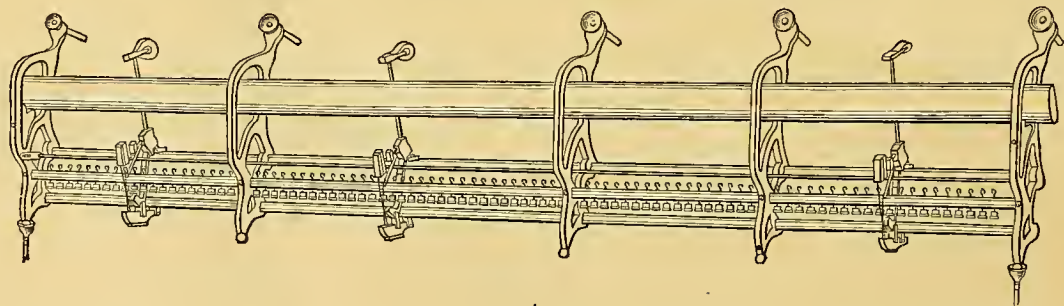
Made by machinery, very exactly adjusted in conformity with the respective scale, each one of these actions fits into any piano of the same style, and a new action can be adjusted by any one in case the hammers of the old one have become worn by long continued use.

FIGURE E.



E illustrates the tubular metallic frame, with standards for grand piano actions. Also several hammers with mechanism, in position.

FIGURE F.



F illustrates the tubular metallic frame, with hangers, for upright pianos. Also, the screws for fastening the action and standards (with conical half-round cavities), serving as points of support for the action.

The scale of the STEINWAY upright piano leaves a number of intermediate spaces for braces to counteract the pull of the strings; these spaces permit of the use of an equal number of hangers, which are screwed to the wrest-plank above, and serve the purpose of supporting the metal tubes of the action. Below, these hangers rest in the sockets of metal standards, the latter being screwed into the bottom of the key-board, which results in an absolute unchangeableness of the position of the action to the strings. Secured by letters patent No. 81306, dated August 16, 1868.

No. 5—PATENT VIBRATING SOUND-BOARD BRIDGE, WITH ACOUSTIC DOWELS, USED IN ALL GRAND AND UPRIGHT PIANOS.

This invention has become of importance in the manufacture of grand and upright pianos of small dimensions. The acoustic dowels are used in such places where suspended bridges are to be brought into connection with the sounding-board, and serve the purpose of transmitting vibrations from the one to the other. Secured by letters patent No. 88449, dated April 6, 1869.

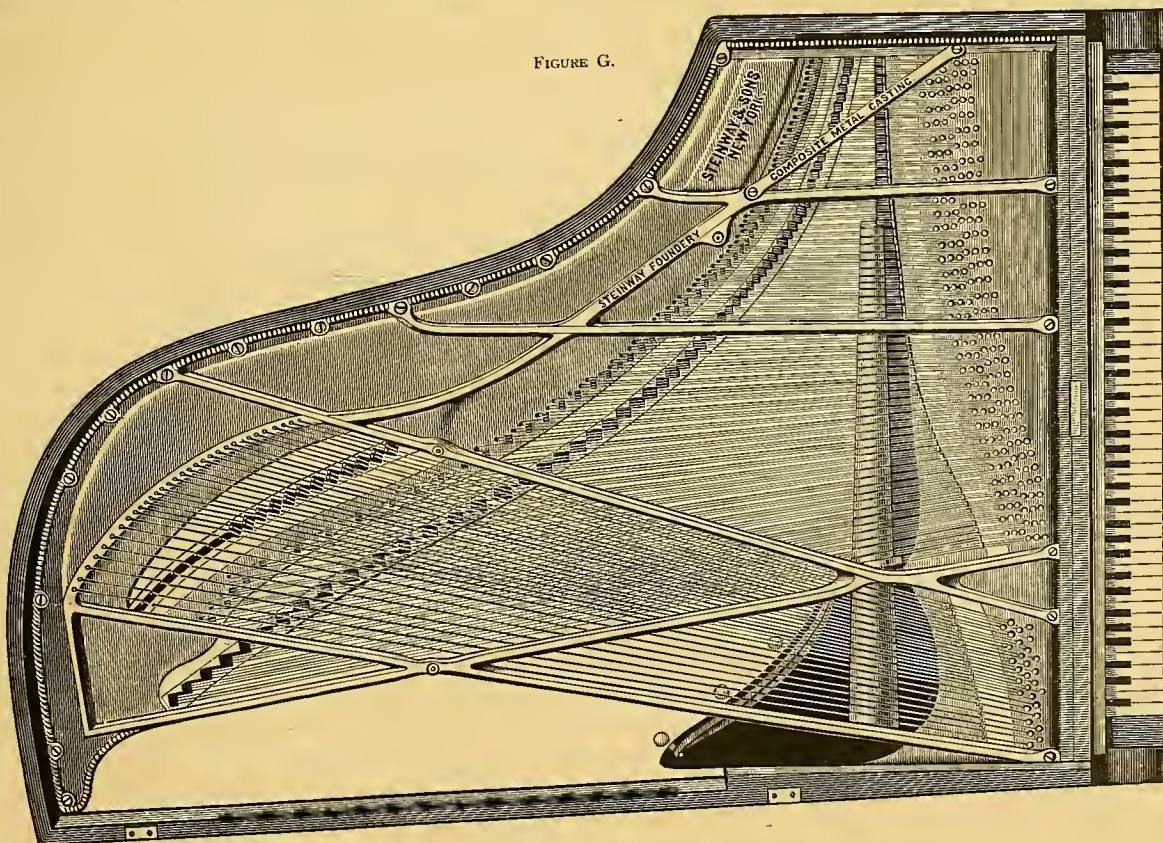
No. 6—PATENT INDEPENDENT DETACHED PILOT, AND METAL STANDARDS, APPLIED TO THE ACTIONS OF ALL GRAND PIANOS.

The inconvenience formerly existing, viz., that repairs to the action of a grand piano could not be made without the entire case being sent, gave rise to this invention, which does away with the formerly employed connection between the key-board and the action, and is based upon that qualification of the STEINWAY piano which is the natural sequence of Patent No. 4, heretofore described. Secured by letters patent No. 93647, dated August 10, 1869.

No. 7—PATENT RING BRIDGE ON SOUND-BOARD.

This invention is of vital importance in its application to grand and upright pianos. The lengthening of the sound-board bridge lines was made possible solely by the overstrung system, and its value was immediately apparent; in fact, it was at once recognized as the principal cause of the increased volume of tone. By the formation of the bridge in the shape of a ring to right or left, reversed to its original direction, a further elongation was obtained, and the unavoidable interruption of the several bridges, as formerly used, is entirely done away with.

This construction, in connection with the mode as described in Patent No. 5, yields a greater evenness of tone in the transition from the steel to the covered strings. Secured by letters patent No. 97892, dated December 14, 1869.



No. 8—PATENT REPETITION ACTION, WITH SPRING BACK CHECK, APPLIED TO ACTIONS OF SQUARE PIANOS.

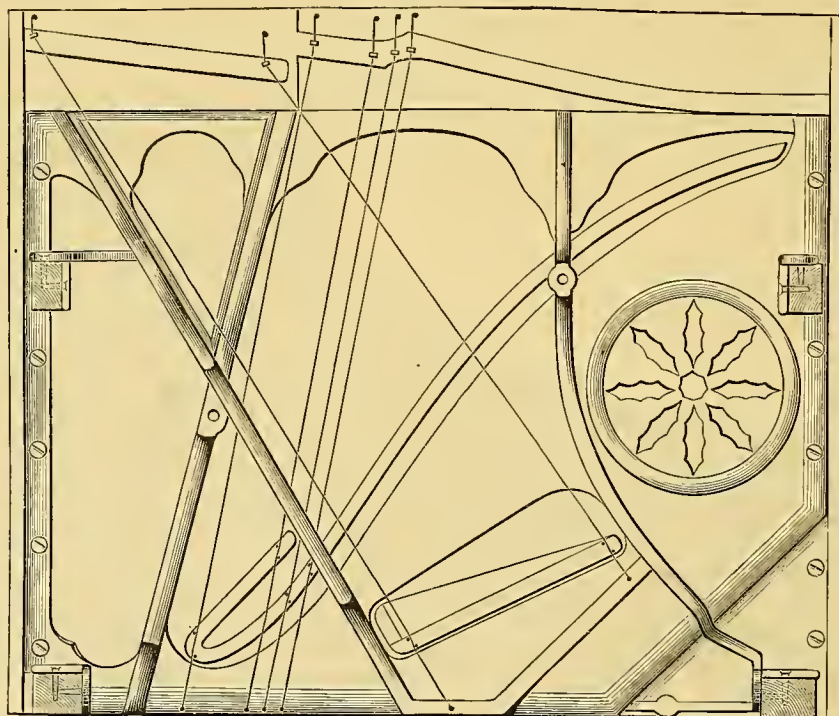
This action is made serviceable also for grand pianos, through the pull of a spring counterbalancing the weight of the hammer; the back-check being provided with a spring permits of the quickest repetition of the touch. Secured by letters patent No. 115982, dated June 6, 1871.

No. 9—NEW IRON CUPOLA AND PIER FRAME FOR SELF-COMPRESSION, APPLIED TO GRAND AND UPRIGHT PIANOS.

The flat form in the iron frame is here replaced by the cupola, or concave shape, viz., the rims or outer circumference of the iron frame are curved closely towards the sounding-board and directly surround it.

The scale of 1862, used in connection with Patent No. 5, groups the strings in three different divisions. By lengthening the bridge in the shape of a ring to the middle of the sounding-board, the problem was solved of bringing larger surfaces of the board into vibratory action. Only a thorough knowledge and careful calculation of both the weight and the pull of the strings (of differing specific weight) made it possible to obtain an even, large, and singing tone even in the smallest form of piano, with this construction.

FIGURE H.



H shows the cupola iron frame, with patent ring bridge, as used in upright pianos. The compression screws press the sounding-board against the metal frame; the latter rests, without any intermediate bushing, directly upon the board, and descends at certain points between the braces of the wooden case; here the compression screws bring to bear a pressure sideways against the under-bracing of the sound-board. A complete compression of the edges of the sounding-board is thus obtained by the pressure of the screws, combined with the strain of the strings upon the iron frame. This process is even simpler and more effective than that described in Patent No. 3, and gives to the sounding-board a resisting and sustaining power against the pressure of the strings.

FIGURE I.

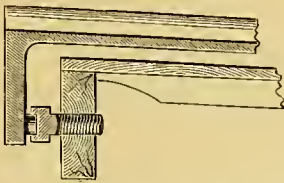
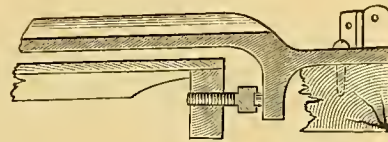


FIGURE K.

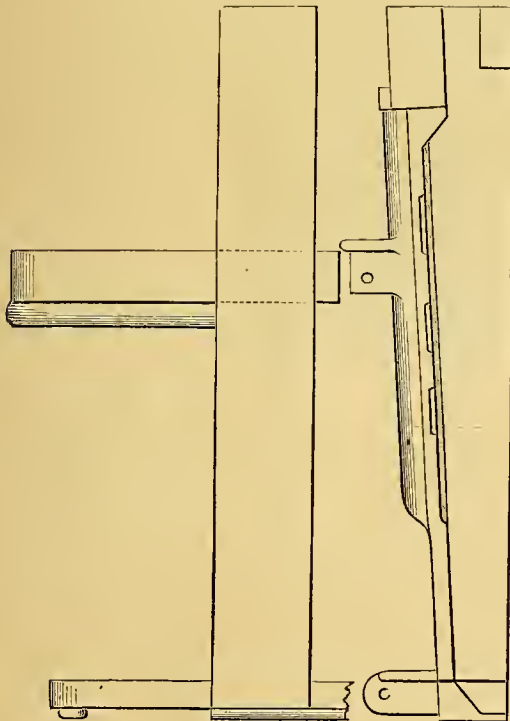


The above figures, I and K, show transverse sections of the cupola frame. I, illustrates the part below the wrest-plank, with compression screw, and K shows that lower section which lays behind the bass-bridge, also with compression screw.

Certain angular projections cast upon the iron frame serve (as the patent expresses it) to separate and isolate the resonating portion of the instrument from the front part, the latter consisting of the ornamental case work, the key-board, the pedal-board and the action, all of which exercise a considerable and rather disturbing influence upon the small sounding-board matter. The following illustration shows how the above-mentioned evils have been avoided by the described process. At the same time, by being able to separate the piano in two parts at pleasure, its transportation has been greatly facilitated.*

FIGURE L.

FIGURE M.



E. S. GILLER. X.A.

Figure L illustrates a side view of the front part of this upright piano which supports the key-board and the ornamental case work.

Figure M shows a side view of the sound-board part, with the cupola metal frame and the projecting flanges to which the front part of the case is screwed.

Also illustrates the novel manner of applying the wrest-plank, which, in its entire length and thickness, rests upon a metal basis, the latter passing between the wrest-plank and the sounding-board. This construction, while of greater lightness than heretofore, imparts to the instruments an extraordinary capacity of standing in tune.

* The first piano so constructed was used by the celebrated Dr. Franz Liszt, at the "Wartburg," in 1873, at the performance of his composition, "St. Elizabeth" (Die heilige Elisabeth). Up to that time no piano could be moved to the platform of this old and celebrated hall of song, and only by the above-mentioned facility of taking apart the STEINWAY piano, its use became possible.

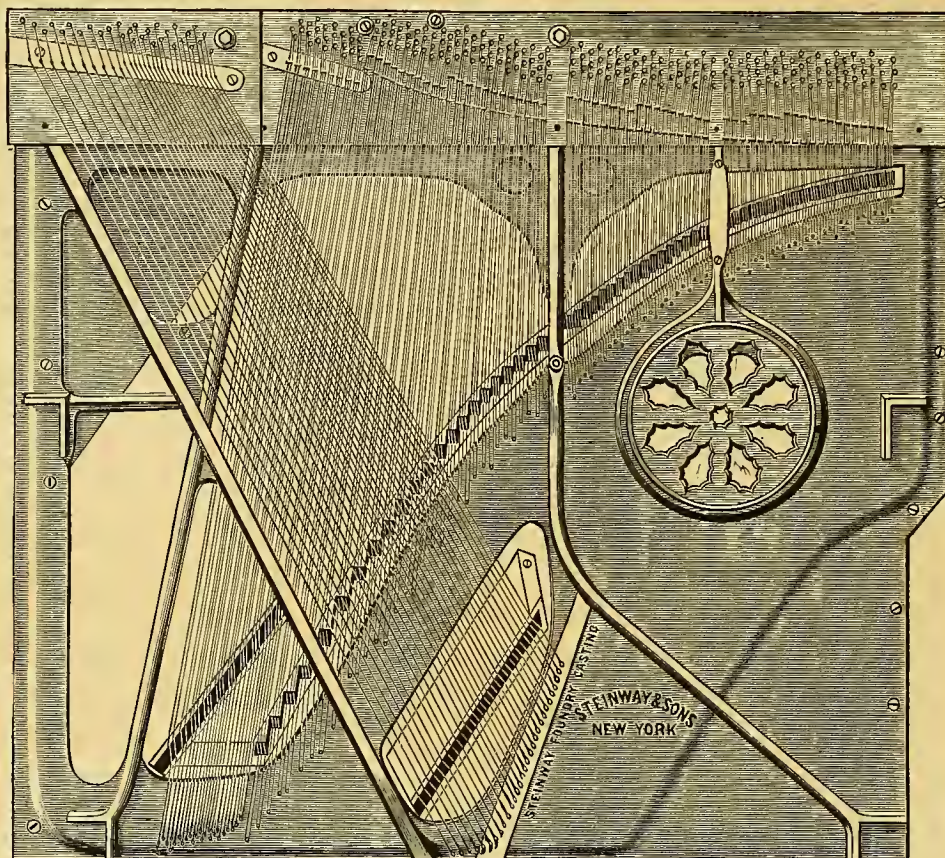
Extract from a letter from Dr. Franz Liszt to the celebrated composer, Metz-dorf, which letter, dated Weimar, September 27, 1873, is now in possession of MESSRS. STEINWAY & SONS.

"Pray tell MR. STEINWAY that his splendid upright piano shone to brilliant advantage at the festival performances at the Wartburg, where last Tuesday, it served under my fingers as 'Vice-Orchestra,' exciting general admiration.

"Yours, very truly,

"FRANZ LISZT."

FIGURE N.



Secured by letters patent No. 127384, dated May 28, 1872.

No. 10—GRAND DUPLEX SCALE, USED IN ALL GRAND, CABINET-GRAND AND SQUARE-GRAND PIANOFORTES.

The invention of the duplex scale is owing to the scientific investigations which Privy Counselor Professor Dr. Helmholtz has developed in his book, "Ueber Tonempfindungen" (on Tone Sensations).

It has been observed that the character or shade (timbre) of tone produced by the transverse vibrations of a steel string, changed just as soon as the fixed end-points upon the same sounding-board matter were of different material; for instance, if the agraffe was fastened into iron, the tone differed much from that which was produced when the agraffe stood in wood, and this induced STEINWAY to make a careful analysis of tone, if we may be permitted to so call it, by means of the tone and resonance tubes constructed by Helmholtz.

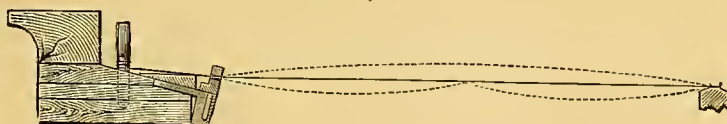
The discernment of the purity of tone depends upon practice acquired by the physical examination of the causes of impure tone mixtures. The trebles of many pianos develop such strong tone mixtures, from the sounding of the material of fastening, that something is substituted in place of tone, which is neither sound nor tone, but a thud of the approximate pitch of tone, produced and determined by the single fundamental vibration of the string.

When heavier strings are used, and the tension thereby increased, the evil becomes still worse; under such circumstances, the capacity of the string of being divided in its vibrations is lessened, and it is impossible to obtain the sounding of the perfect overtones with the fundamental tone which impart and give to it both purity and richness.

The duplex scale, in fact, is a second scale, of exactly and mathematically proportioned and shortened length, added to the principal scale.* This second or duplex scale is applied between the tuning-pins and the end-points of the strings upon the wrest-plank.

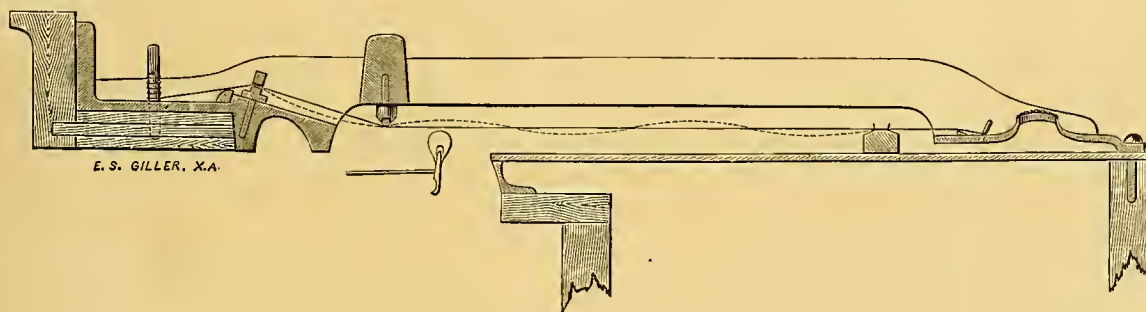
The next following illustration, Figure O, shows the former system of the application of the agraffe; the upper punctuated line shows the vibrations of the fundamental tone, in which, in thinner strings, but one over-tone or dividing point was formed, as is indicated by the lower punctuated line.

FIGURE O.



The next following illustration, Figure P, shows the patented construction brought to perfection, inasmuch as a higher dividing node has been chosen at will, which invariably contains all the lower overtone vibrations down to the fundamental tone of the entire length of the string.

FIGURE P.



P shows the transverse section of a grand (fully described under Patent No. 14), with capo d'astro bar and cupola frame.

The tone produced by a string consists of a fundamental tone together with a number of partial over-tone vibrations; the latter are again divided into perfect consonances (the over-tones of which accord in perfect harmony), and in dissonances (affected by impurities of tone), such as for instance the chord produced by the prime with the diminished third and seventh. These latter have been avoided in the duplex scale, so that but perfect consonances are developed, such as the prime with its octave and super-octave with its fourth and fifth; they are used in such high pitch, that a disturbing after-sound or vibration is avoided. At the same time the principal string receives the impulse to divide itself in its vibrations at the smallest distances; this is attained by the points in the agraffes which permit of the crossing of the nodes of vibration. These qualities were not possessed by the short stiff strings, as formerly used.

The tone is thereby rendered richer, purer, and more musical, while its carrying capacity is considerably augmented. † Secured by letters patent No. 126848, dated May 14, 1872.

* The strings between bridge and hitch-pin are also a shortened scale; the pitch of each string of this shortened scale must be compared with the pitch of the same string in the principal scale, which gives to the tuner a perfect control of the proper adjustment of tone and transport of the tension over the bridge.

† Professor Dr. Helmholtz writes about this invention as follows:

BERLIN, August 13, 1873.

MESSRS. STEINWAY & SONS:

GENTLEMEN—I can only congratulate you on the great improvement you have achieved by the introduction of your duplex scale into your pianofortes. I have repeatedly and carefully studied the effects of the duplex scale just applied to my STEINWAY grand piano, and find the improvement most surprising and favorable, especially in the upper notes, for splendid as my grand piano was before, the duplex scale has rendered its tone even more liquid, singing and harmonious. I deem this improvement very happy in its results, and, being based upon scientific principles, capable of still greater development.

Yours, very truly,

H. HELMHOLTZ.

No. 13—CAPO D'ASTRO-AGRAFFE.

To elucidate the importance of the agraffe here below described, we refer to the illustration, figure P (page 15), of the duplex scale in patent No. 10.

Agraffes* serve the purpose of limiting the vibrations of the strings at that end point which is opposite to the resonance body, viz., the sounding-board.

In the description of the duplex scale it has already been shown how injuriously a pure tone may be affected by agraffes wrongly constructed, or secured in an improper manner.

The use of the duplex scale necessitated that the touching point at which the long and short scale unite should be reduced to a minimum, because the point of crossing of the highest overtones is an exceedingly narrow one.

This newly constructed agraffe of copper alloy has inserted upon its upper edge a cap of steel, which renders it impervious to impressions, or being flattened by pressure or blows. It serves to determine the limiting point between the long principal scale and the partial or duplex scale; it makes no vibrations of its own, and thus every injurious bytone is avoided. Secured by letters patent No. 170646, dated October 20, 1875.

No. 14—NEW METAL FRAME CONSTRUCTION IN GRAND PIANOS.

As regards the resisting strength of a grand piano, it was hitherto of no material consequence whether the iron frame was of cast or wrought iron. The total pull of the strings in a grand piano in different factories fluctuated between 25,000 and 36,000 lbs. (about 2,000 lbs. being the average tensile strength to the square centimeter of good ordinary cast-iron). This limit, however, could not be exceeded without danger of a break in the iron frame.

FIGURE R.

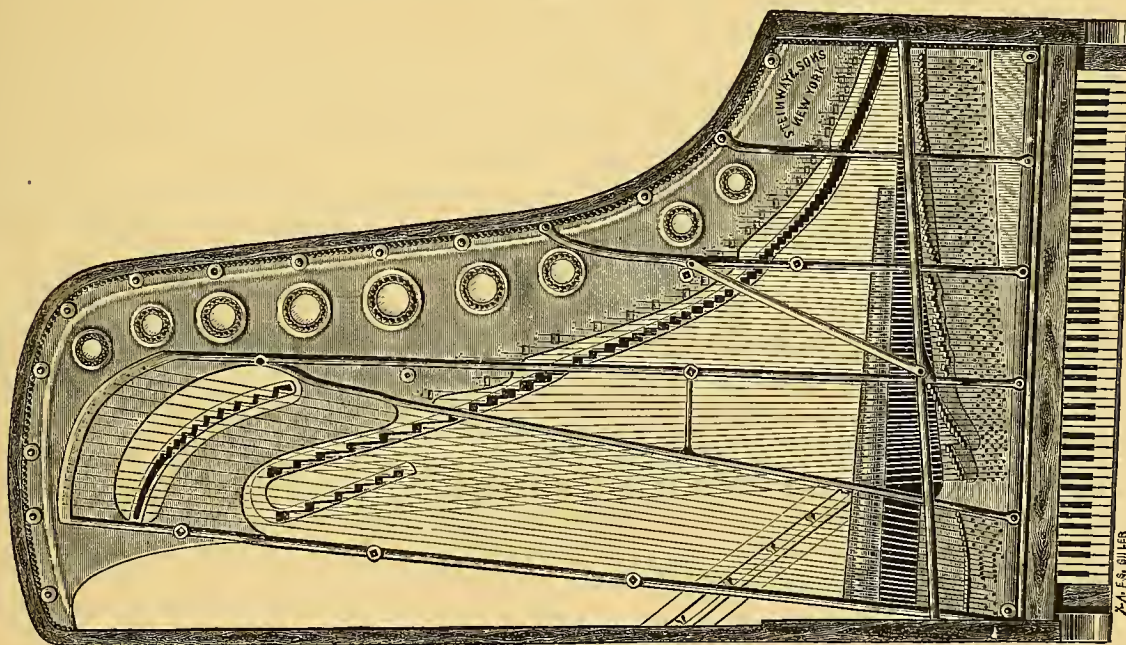


Figure R shows the new Centennial Grand overstrung scale, the patented design of the cupola iron frame, with the new capo d'astro bar for the reception of the steel-capped agraffes underneath, and serving as point of connection with all the other braces of the iron frame; shows also the oblique bar, the duplex scales and patent sound-board ring-bridges.

* Curiously enough we see at present advertised as something quite new, under the name of "double-bearing agraffes," the first primitive experiments made with agraffes, in which holes were drilled without conical ryming, whilst every piano-maker knows that these first historical experiments were subject to the grave fault that in tuning, the strings would not readily slide (transport), and broke easily under the blow of the hammer at the sharply curved point in the agraffes.

The grand pianos heretofore made had braces against the pull of the strings, which were either of wrought iron and screwed on the iron plate, or were cast with the latter in one piece. This resulted in a loss of firmness, for the factor of safety could only be based upon the "shearing" strength of these braces (which in cast iron is placed only at 500 kilograms per square centimeter, for instance, by the Prussian government in public buildings, etc.). The problem to be solved was, therefore, to combine the construction of the braces with the wrest-plank in such a manner, that the absolute strength attained would be a perfect factor of safety; in other words, the weak spot in the braces used heretofore was very near their connection with the wrest-plank part, so that whenever inferior metal was used, or the tension of the strings was very great, the braces would often break, because the level of this tension was *under* the level of the braces. By the construction of a second cross-bar *over* the strings, which runs parallel with that cross-bar forming the angular projection of the wrest-plank part of the iron frame *under* the strings, the latter are placed between the two cross-bars, the longitudinal bars setting with straight resisting pressure directly against the upper cross-bar.

This new principle of construction is, however, vastly benefited by the important fact, that while the very best American iron, according to good authorities, reached a tensile strength of 3,000 lbs. to the square centimeter, STEINWAY & SONS finally succeeded, by establishing their own foundry, and a thorough study of the metal alloys of the various brands of crude iron, in producing steel-like castings, possessing an absolute resisting strength of 5,000 lbs. pull to the square centimeter, and having, at the same time, most energetic capacity of vibration. This rendered it possible to increase the pull of the strings to 75,000 lbs., with absolute freedom from danger of a fracture of the metal frame.

This important progress in the art of piano manufacture is based firstly upon the vastly increased strength of the material, and secondly upon a new construction which unites the angular projection of the iron frame, overlapping and abutting against the wrest-plank, with a capo d'astro bar. This bar runs parallel with the wrest-plank above the strings, and serves as point of connection for all iron braces; at the same time it is used for the insertion, underneath, of the newly patented agraffes heretofore described. As a result of this construction, the suspended wrest-plank can neither be raised nor depressed by the largely increased pull of the strings.

The iron frame in connection therewith was constructed in the form of a cupola, in accordance with the results of varied experiments and thorough tests of the material used in the foundry.

A number of raised and bell-shaped holes or openings in this mass of metal permit the vibrations of the sounding-board underneath to be transmitted freely and without hindrance to the outer air.

Tensions or strains (planes of weakness) to which castings are liable, are entirely avoided by this process; a diagonal brace prevents the sideway curving of that part of the iron frame to which the strings are fastened.

Secured by letters patent No. 170647, dated October 20, 1875.

The above illustrated design is a representation of the braces, the scale and the cupola form of metal construction, with its ornaments. The selection of these ornaments with the projecting edges, and the cupola-shaped body of iron, was made, as already intimated, to prevent, and in fact entirely do away with the tensions (planes of weakness) to which castings are subject, and to aid the proper shrinkage of the metal.

The combination of all these improvements renders this construction not only elegant in appearance, but extraordinarily efficacious against the pull of the strings, and also powerfully aids the free development of a good quality of tone.

The design of this iron frame, with its ornaments and fastenings, is also secured by letters patent No. 8782, dated November 9, 1875.

LIST OF PIANOFORTES
ON EXHIBITION BY
STEINWAY & SONS,
AT THE
CENTENNIAL EXHIBITION, PHILADELPHIA, 1876.

I.

CONCERT GRAND PIANO, No. 34002, style 5 in STEINWAY & SONS' Illustrated Business Catalogue; $7\frac{1}{3}$ octaves, rosewood case, length 8 feet 9 inches.

II.

CONCERT GRAND PIANO, No. 33710, same instrument, in ornamental rosewood case, serpentine mouldings, and richest carved legs and lyre.

III.

CONCERT GRAND PIANO, No. 34067, style 3 in Catalogue; $7\frac{1}{3}$ octaves, rosewood case, length 8 feet 5 inches.

IV.

CONCERT GRAND PIANO, No. 34115, style 3 in Catalogue; $7\frac{1}{3}$ octaves, rosewood case, length 8 feet 5 inches.

V.

PARLOR GRAND PIANO, No. 32710, style 1 in Catalogue; 7 octaves, rosewood case, length 6 feet 8 inches.

VI.

UPRIGHT CABINET GRAND, No. 32718, style 3 in Catalogue; $7\frac{1}{3}$ octaves, rosewood case, height 4 feet 8 inches.

VII.

UPRIGHT CABINET GRAND, No. 34132, style 3 in Catalogue; $7\frac{1}{3}$ octaves, in American Walnut and California laurel wood, height 4 feet 8 inches.

VIII.

UPRIGHT PIANO, smallest size, No. 33891, style 1 in Catalogue; 7 octaves, rosewood case, height 3 feet 10 inches.

IX.

SQUARE GRAND PIANO, No. 34321, style 5 in Catalogue; $7\frac{1}{3}$ octaves, in richly-finished and ornamental case; length 6 feet $11\frac{1}{2}$ inches, width 3 feet 6 inches.

NOTE.—It may be of interest to state, as showing the rapid increase of Messrs. STEINWAY & SONS' business, that the pianos exhibited by them at London, 1862, were numbered 4607, etc., etc.; those exhibited at the Paris Exposition of 1867 were numbered 12529, etc., etc.; whilst those now exhibited at Philadelphia have reached No. 34321, showing that in the interim of nine years since the Paris Exposition the firm has manufactured and sold 22,000 Pianofortes.

LIST OF ARTICLES, CASTINGS AND PIANO HARDWARE, ETC.,
MADE IN
 STEINWAY & SONS' FOUNDRY AND METAL WORKS,
AT
 ASTORIA, LONG ISLAND,
AND
 EXHIBITED BY THEM IN THE MACHINERY HALL OF THE CENTENNIAL EXHIBITION, PHILADELPHIA, 1876.

- One rough Casting of Full Frame for largest Grand Piano, as taken from the mould.
- One full Frame for largest Grand Piano, finished in bronze, with Agraffes, ready to be put into the instrument.
- One do. for a Square Piano.
- One do. for an Upright Piano.
- One complete Patent Tubular Metallic Action Frame, for Upright Piano, with Metal Hangers, and Screws for fastening to wrest-plank above, and Spherical Ends below, ready to set into the sockets. Showing also several Hammers, with mechanism adjusted and in position.
- One do. for Grand Piano.
- One Show Case, containing sixty different Articles of Hardware, used in the construction of a STEINWAY Grand Piano, also fifty-four different Pieces for an Upright Piano, and thirty-three different Pieces for a Square Piano.
- One* Testing Machine (self-constructed), with Sample of Castings, which show a uniform resisting strength of 5,000 lbs. and upwards to the square centimeter.
- One Show Case with broken Samples of Castings, made at different times, partly chilled, showing the uniformity of metal structure.

Analysis of Metal used for STEINWAY & SONS' Castings, made by Professor Otto, of Brunswick, Germany :—

	Specific weight, 7.28														
Contains in 100 parts :	<table style="border-collapse: collapse; margin-left: auto; margin-right: auto;"> <tr> <td style="font-size: 4em; vertical-align: middle;">{</td> <td style="padding-left: 10px;">94.71 Iron.</td> </tr> <tr> <td></td> <td style="padding-left: 10px;">3.34 Carbon (as graphite).</td> </tr> <tr> <td></td> <td style="padding-left: 10px;">0.15 Carbon (bound).</td> </tr> <tr> <td></td> <td style="padding-left: 10px;">1.20 Silicium.</td> </tr> <tr> <td></td> <td style="padding-left: 10px;">0.50 Manganese.</td> </tr> <tr> <td></td> <td style="padding-left: 10px;">0.08 Sulphur.</td> </tr> <tr> <td></td> <td style="padding-left: 10px; border-top: 1px solid black;">99.98</td> </tr> </table>	{	94.71 Iron.		3.34 Carbon (as graphite).		0.15 Carbon (bound).		1.20 Silicium.		0.50 Manganese.		0.08 Sulphur.		99.98
{	94.71 Iron.														
	3.34 Carbon (as graphite).														
	0.15 Carbon (bound).														
	1.20 Silicium.														
	0.50 Manganese.														
	0.08 Sulphur.														
	99.98														

“Traces of Phosphor not definable ; no authenticated quantity of Arsenic.

- One complete section of a Patent Tubular Grand Piano Action, consisting of a single tone, with its key, hammer, and mechanism set up on tubular action frame, representing the STEINWAY system in motion.
- One do. for Upright Piano also in motion.

* Every full iron frame bears the date when cast, and with each series of castings one test piece is cast, which is tested with this machine, and must possess the standard tensile strength of 5,000 lbs. to the square centimeter ; the limit of strength reached being duly booked, so that every full iron frame thus cast can conscientiously be warranted by the firm.

PIANOFORTE MANUFACTORY

OF

MESSRS. STEINWAY & SONS.

THE Pianoforte Manufactory of STEINWAY & SONS is located on Fourth avenue, in the City of New York, on which its frontage occupies the entire block between Fifty-second and Fifty-third streets (201 feet), the depth of the front building being 40 feet. The wings of the main building, extending down Fifty-second and Fifty-third streets, are each 165 feet in length by 40 feet in depth; the entire building, including the basement, is six stories high. Adjoining the Fifty-third street wing, and being a continuation of the same, is located a building of 100 feet front and four stories high. These factory buildings have an uninterrupted frontage extent on the avenue and streets named of 631 feet.

The architecture of the building is of the modern Italian style; it is built in the most solidly-substantial manner, of the best brick, with lintel arches of the same, and brick dental cornices. The basement walls are two feet thick, set in concrete; the first story walls, 20 inches, and the upper walls 16 inches in thickness. The factory buildings proper cover twenty city lots of ground, seventeen others being used for seasoning lumber, etc. The side-wings are separated from the main front building by solid walls, extending from basement to roof, passage-ways running through them, each of which is provided with double iron doors on either side, so that in the event of a fire occurring, only that portion of the building in which it originated can be destroyed.

In the yard, which is surrounded on three sides by the front building and its wings, are three separate buildings, each two stories high, viz. : one of 40 × 75 feet, devoted to the steam kiln-drying of all the lumber used; the second, 20 × 100 feet, to the assorting and preparing of all the veneers; and the third, of 29 × 81 feet, to the making of cases for Upright Pianos.

The floors of the New York factory buildings have a surface of 175,140 square feet. In the rear of the buildings, and on both Fifty-second and Fifty-third streets, are open spaces of ground containing an area of 42,500 square feet, on which 3,500,000 square feet of lumber are constantly stored in the open air, for seasoning purposes; each separate piece of which is exposed to all the atmospheric changes for two years, and then kept in the steam drying rooms for three months, prior to being used in the factory.

The drying rooms are divided into seven compartments, containing over 400,000 feet of lumber, constantly under the process of kiln-drying, at a temperature of 130° Fahrenheit.

Beneath the yard alluded to, there are fire-proof vaults for the storage of coal, and here are also placed four steam boilers, of the aggregate power of 540 horses, by which the necessary amount of steam is generated for the 76,000 feet of pipe used in heating the drying rooms and workshops, and driving two steam-engines of respectively 300 and 80 horse-power; these, in turn, putting in motion no less than 165 different labor-saving machines.

It would require the extent of a goodly sized volume to describe the 165 different planing, sawing, jointing, drilling, mortising, turning, and other machines used in this factory, and to elucidate their various objects; it therefore must suffice to state, that from careful and moderate estimate, they replace the hand labor of at least 900 workmen, added to which they do all the hard and difficult work which formerly, to so great an extent, endangered the health, and even the lives, of the workmen employed in this description of labor.

In the wing on Fifty-third street, the bottoms, wrest-planks, and other portions of the Piano are glued and shaped by machinery, in the lower two floors. The floor above is occupied by the case-makers, who fit together all the parts made below, veneer the cases, and prepare them for the varnish rooms, which occupy the entire top floors of the front building and side-wings, and extend a length of 531 feet.

From these last described floors the completely finished and varnished cases are transferred to the floor beneath, in the front building, where the sounding-boards are fitted into the cases; on the next floor below the Pianos are strung, and the action and key-boards are fitted in, which latter are manufactured on the corresponding floor of the wing on Fifty-second street. Here, also, the ready-varnished tops, the legs, and the lyres of the instruments are adjusted and put on; after which, on the next floor, the action and touch are carefully regulated and equalized to the greatest degree of accuracy. After this is completed, the thoroughly finished Piano is sent to the salesrooms, where it receives its final polish prior to being delivered to the purchaser. On the same floor of the building on Fifty-third street, the office of the establishment is located, from which, by the medium of a private magnetic telegraph, the manufactory is brought into direct communication with the ware-rooms on Fourteenth street, as also through cable across the East river with STEINWAY & SONS' Saw Mill and Metal Works, at Astoria.

The *action-rooms* are located in the building adjoining the Fifty-third street wing, and are among the most interesting portions of this vast piano manufactory. Here the machinery used is of the finest and most elaborate description. The utmost care and thorough supervision is exercised, the choicest material only used, and the most skillful workmen employed to construct the most perfect and unchanging action that it is possible to produce, and that will do its work with unerring precision through a long series of years.

Next to the office is the store-room, where the actions, felt, leather, screws, ivory, strings, tuning-pins, etc., used in the construction of the inner portions of the piano, are stored. Of these articles, STEINWAY & SONS invariably keep a vast supply on hand, the average value of which is from \$40,000 to \$50,000.

No fire is used throughout the entire buildings, every portion being heated by steam pipes, and lighted with gas. Three large steam elevators are used for the transportation of all heavy articles, either up or down. Steam is kept up night and day, to insure uniformity of temperature in the factory and drying-kilns at all times. Besides the night-engineer, there are four watchmen patrolling the establishment at intervals of thirty minutes, each man carrying a registering watchman's time-piece, which records the exact minute he arrives at each station on the various floors, and at once showing the fact if the watcher has neglected his duty.

This vast manufacturing business is divided into eighteen departments, each of which is placed under the control and constant inspection of a skilled foreman, these, in turn, being controlled by a head foreman. No workman is permitted to work at more than one branch of the business; thus, from the fact that every workman is continually making only one and the same article, he achieves an absolute perfection in his work, unattainable in small factories, where such strict subdivision of labor cannot exist. Again, each article, until it is finally completed, passes through the hands of a number of different workmen, none of whom receive it from the previous workman in that stage of manufacture unless it is perfectly faultless in every respect.

It may therefore justly be said, that STEINWAY & SONS' manufactory, with its elaborate machinery, implements, and corps of skilled workmen, represents, in a remarkable degree, the highest possible state of organization and division of labor. An average of one thousand three hundred instruments are constantly progressing through the various stages of manufacture, from incipiency to completion. The number of workmen in this establishment is, on the average, six hundred (exclusive of about one hundred and fifty employed in the Astoria works), who turn out sixty instruments per week, viz., ten grand, twenty-five upright, and twenty-five square pianos. The total sum paid by STEINWAY & SONS to all their employees, as wages, during the year 1875, was \$603,127.

The control of the factory, the warerooms and the various purchases, is under the direct personal supervision of the members of the firm of STEINWAY & SONS. All inventions and changes in the manufacture of pianos, and all other important business acts, are the result of common consideration and debate among the members of the firm, and to this harmonious co-operation and unanimity of action a large proportion of the unexampled success which the firm has achieved may be attributed.

STEINWAY & SONS'

Saw Mill, Iron and Brass Foundries and Hardware Works,

AT

ASTORIA, LONG ISLAND, N. Y.,

Opposite One Hundred and Twentieth Street, New York City.

THE vast and constantly increasing demand for STEINWAY & SONS' pianos, both for home consumption and foreign exportation, has compelled them to still further increase their manufacturing facilities, and add additional branches which no other pianoforte factory in the world possesses.

A few years since, STEINWAY & SONS purchased a plot of ground comprising 400 acres, at Astoria, Long Island, distant but four miles from their New York manufactory, and having a water frontage on the East river of over half a mile. On this property, so admirably located, and suitable for the purposes required, STEINWAY & SONS have erected their Steam Saw Mill, Iron and Brass Foundries, Boiler and Engine Houses, and a large building for the drilling, finishing, and japanning of the full iron frames and other metal portions (used in the construction of their Pianofortes), which are manufactured under their sole and special supervision, in place of being bought—as by all other piano-makers—ready-made of outside parties.

All of these new buildings are each two stories high, and are constructed in the most permanently substantial manner, of brick and stone. They form a hollow square, with a frontage of 212 feet, and a depth of 200 feet, the water-front of which is occupied by a substantially constructed dock, 384 feet in length.

At the Saw Mill, all the lumber, rosewood and various other kinds of wood used in the construction of a STEINWAY piano—whether in plank or veneer—is sawed out from the solid logs, under the personal supervision of a member of the firm, and every faulty portion immediately cast aside.

The important circumstance, that STEINWAY & SONS own their foundry, which they personally control and superintend, where nothing but the best brands of metal are used for the casting of that most important portion of a piano, the iron frame, offers a perfect guarantee that the latter are free from all imperfections.

All other pianoforte manufacturers—*without exception*—are compelled to have their iron frames cast at ordinary foundries, where they are often subject to the use of inferior, brittle, and second-hand metal, and insufficient care in casting, the chief aim, on account of close competition among iron foundries, being cheapness; hence, an imperfection in such iron frames is not an uncommon occurrence.

The Iron Foundry of STEINWAY & SONS is specially built for the casting of full metal frames for their pianofortes. Only the choicest brands of metal and coal are used, and after lengthy and costly experiments, STEINWAY & SONS have

succeeded in producing composite metal, closely resembling cast-steel, of almost double the strength of ordinary cast-iron, and yet of comparative lightness. These qualities produce in the STEINWAY piano an increase of vibratory power, and the advantage of remaining longer, firmer, and better in tune than any other instrument heretofore produced.

All the numerous metallic parts required in the construction of a piano are here, in the various establishments, either cast, modelled or prepared for immediate use by the most skillful artisans obtainable, or by specially constructed machinery. This system guarantees the greatest possible precision and exactness, and is the very foundation of the wonderful lightness, responsiveness, and durability of the STEINWAY actions, as is fully explained in Patent No. 4.

As stated above, the property is situate on the East river, which has sufficient depth at this point to permit of vessels laying alongside the docks erected for the purpose of unloading their freight.

Pines and fir trees from the far West, as well as other kinds of softer and harder woods, are brought by barges, via canal, uniting the Hudson river with the great sweet-water lakes of the north; the finer kinds, from the tropics, for ornamental purposes, and those from the North, as spruce, for sounding-boards, are here received and unloaded. According to quality, and the use for which they are intended, these are either placed in water-basins or stacked up for air drying. By means of an ingenious machine, immense logs are dragged to the saw mill, where they are cut or quartered according to demand and use, by gigantic circular veneer saws or large band saws, after which the lumber so cut is exposed on level ground to the eastern sea-breezes or western dry land-winds, and only when thoroughly well seasoned is it removed from Astoria to the factory for final use in the manufacture of pianos. No other piano factory, either in America or Europe, possesses such facilities in the same degree, and they unquestionably constitute the rational foundation of a thorough and excellent manufacture.

THE
WAREROOMS AND CONCERT HALL
OF
STEINWAY & SONS.

These buildings are located on East Fourteenth street, between Union Square and the Academy of Music (the Italian Opera House of New York). They have a frontage of white marble, four stories in height and 50 feet in width, the front portion having a depth of 84 feet; from which point the buildings are 100 feet wide, extending through the entire block to Fifteenth street, a distance of 123 feet.

The entire first floor, from Fourteenth to Fifteenth street, a depth of 207 feet, is exclusively devoted to the exhibition and sale of the pianofortes manufactured by the firm.

The second story of the building, fronting on Fourteenth street, contains the smaller hall, 84 feet long by 25 feet wide, which is available for lectures, concerts of chamber music, and parlor entertainments, when a large auditorium is not desired. By means of sliding partitions, this hall can be connected with the large STEINWAY HALL, immediately in its rear, the stage of which fronts on Fifteenth street.

In the two upper stories of the main building on Fourteenth street, a number of spacious studio rooms are set apart for the gratuitous use of eminent resident pianoforte teachers, where their lessons are given.

STEINWAY HALL proper—This spacious and unrivalled Temple of Music and Art of the United States, was erected in 1866, and its internal decorations completed in 1868—the warerooms on Fourteenth street having been built in 1863.

The hall is 123 feet in length by 75 feet in width, with a height of 42 feet. There are 2,000 numbered seats in the hall, including those in the two balconies, which partially extend into the front building; but the seating capacity of the hall may at any moment be enlarged by the opening of the sliding partitions, which open into the smaller hall, when the length of floor is extended to 207 feet, affording ample accommodation to 3,000 persons.

The entrances and exits of this hall are unusually capacious and entirely free from obstruction, as, in addition to the two main entrances from Fourteenth street, with their high and lofty vestibules, there have been provided exits on each side of the stage, by doors seven feet in width, leading directly to the staircases and exit doors on Fifteenth street, thus rendering it possible to clear the hall, however crowded it may be, within a very few minutes.

That great desideratum in the erection of a public building, viz., perfect ventilation, has been most successfully attained in STEINWAY HALL—scientifically constructed metallic ventilating towers on the roof of the building having by their action proved the most complete success. The lighting of the hall by electricity is under such perfect control that it may be made as brilliant or subdued as may be required, and that instantaneously.

The entire building, from foundation to roof, is constructed in the most thoroughly substantial manner. The basement walls, which are of granite, are three feet in thickness, and the brick walls, from the first story to the roof, have a thickness of thirty-two inches, still further strengthened by heavy external buttresses, all the work being laid in solid cement in place of ordinary mortar, the object being to enclose and surround the inner column of air in the firmest and most reliable manner by the hardest obtainable materials. With the view of achieving the same results in

the ceiling of the hall, the double and extremely substantial roof is cased with heavy slate, and iron zinc, the highly decorated inner ceiling being, however, constructed for acoustic purposes of light, but thoroughly long seasoned wood, which does not rebound the vibrations of sound.

This thoroughly efficacious method of firmly enclosing the interior column of air was fully recognized and appreciated by Messrs. STEINWAY, as the chief element in the obtainment of perfect acoustic qualities in the construction of their hall, it being a fixed acoustic fact that the inner air of the auditorium must not be permitted to escape anywhere, for thus only can it properly react against even the faintest concussion. As a further auxiliary to the concentration of sound, and its development from the stage to the auditors, two boxes were erected, one on each side of it, thus gradually narrowing the stage towards the rear. One of these boxes contains the organ, the wind chests of which are placed in the adjoining house, wherein are also located the artists' dressing and waiting rooms.

STEINWAY HALL was projected and erected by the members of the firm without the aid of a professional architect, the aim and object being the construction of an auditorium sufficiently capacious for all purposes, the acoustic properties of which should be as near perfection as attainable. The acoustical proportions were so nicely calculated that the result has been pronounced alike admirable and unsurpassed in any other hall in the United States, by the many world famed artists, lecturers, and speakers, who have been heard within its walls. It was here, as may well be remembered, that the late Charles Dickens, whose name is a household word throughout the world, read, night after night, to audiences of three thousand delighted listeners, in 1867-68, giving, in his own inimitable way, passages and extracts from his undying works, individualizing his own creations, and giving his own conception of their several characteristics; and when speaking in the lowest tones, even in a whisper, or in imitating the old, the weak, or the consumptive, his enunciation was as clearly understood and appreciated by the occupant of the most remote seat in those vast audiences, as by the nearest auditor.

With the admirable acoustic qualities of this hall, increased charm and new effect has been given to the great classical tone poems and orchestral works of the old masters, as they have been interpreted by the as yet unsurpassed orchestra of Theodore Thomas. The very name of STEINWAY HALL has, for these past ten years, been inseparably connected, in the minds of all devotees of art, science, literature, and music, with their brightest and most renowned exponents, for here they have been seen and heard, and here the most brilliant emanations of their genius have been given to the Western World.

In this hall also the best works of those great modern masters, Wagner, Liszt, Berlioz, and other celebrated composers, have been interpreted in the most perfect manner; and here, the magnificent piano recitations of that great virtuoso and composer Anton Rubinstein, were listened to, with rapt attention, by crowded and delighted audiences.

With its bold yet graceful balconies, STEINWAY HALL conveys the idea rather of an opera house than an ordinary, spacious music hall, without, however, losing that classical simplicity, which should be inseparable from the concert room.

It only remains to be added in conclusion, as previously stated, that the ground floor and basement beneath the hall proper, and the front building on Fourteenth street, are entirely devoted to business purposes, salesrooms, etc., several rooms being occupied by tuners, polishers, and regulators, the latter of whom carefully examine and test all the parts of every piano, prior to its leaving the store, preparing each instrument for the climate for which it is destined. The house No. 107 East Fourteenth street, adjoining the main marble building, contains the offices and counting-rooms of the firm, where a number of clerks, bookkeepers, and correspondents, are fully employed in the daily routine of business, attendant on the weekly average shipment of sixty instruments. Here also is located the telegraph, which connects the establishment with the manufactory on Fourth avenue, Fifty-second and Fifty-third streets, and the saw-mills and metal works at Astoria.

THE FIRM OF STEINWAY & SONS.

HENRY STEINWAY, the founder of the house of STEINWAY & SONS, was born in the Duchy of Brunswick, Germany, on the 15th of February, 1797. An inherent talent for music, combined with positive inclination, induced him in early boyhood, to make his own musical instruments, on which he played with marked predilection and taste; these were the cythera and the guitar. In a short time his efforts, in the direction he had selected, received a further impetus. He first learnt cabinet-making at Goslar, and there also worked in an organ factory. After having thoroughly studied the art of piano-making, he founded an independent business, and through a long series of years he manufactured grand, square, and upright pianos.

The consciousness of his own talent and thorough knowledge of the business he had embarked in, urged him to seek a wider field for his labor, which could not be satisfactory to him confined to a small German state, surrounded on every side by a cordon of custom-houses. It was only natural then that his attention should be directed across the ocean to that country, the free institutions of which offered unlimited scope to the labor of an active, intelligent, and perseveringly industrious manufacturer.

In 1849 the long cherished idea of emigrating to America had resolved itself into a fixed determination. In that year he sent his second son Charles to New York, to personally investigate the prospects which the new world offered to the piano trade, and the probability of success. Upon his report it was to depend whether the family should emigrate to America or not.

That report was so highly favorable, that early in 1850 Mr. Henry Steinway and his family (with one exception) set sail for America. He at once settled in New York, while his eldest son, Theodore, assumed his father's business, and continued to manufacture pianos in Brunswick, with the greatest success, until 1865.

Henry Steinway, the father, and his four sons, Charles, Henry, William, and Albert, on their arrival in the new world, most properly resolved, first of all, to study its habits and customs, and also to obtain a thorough knowledge of the American systems of piano manufacturing and doing business, and the points of difference with that of Europe. They justly realized the fact that the first requirements necessary for the carrying on of a successful manufacturing business, in a new country, were a thorough knowledge of the language, the habits, tastes, and requirements of the people. To effect this desideratum—although Mr. Henry Steinway had brought some capital with him from Germany—he, with his sons, worked in different New York piano factories, and it was only after the lapse of nearly three years, in the spring of 1853, that the father and his four sons commenced business for themselves.

That commencement was made with cautious modesty in Varick street, New York, where they rented a rear building, manufacturing about one piano a week.

The first pianos made by the firm attracted the attention of the professional musicians, and soon afterwards that of the musical public generally, and, at the expiration of a year, the firm found the building it occupied far too small for their increasing business, which had to be transferred to a larger building in Walker street, adjacent to Broadway.

The unprecedented success which accompanied the firm throughout in their manufacture of pianos, and the colossal proportions it attained, may be dated from the year 1855. In that year the firm exhibited at the New York Industrial Exhibition of the American Institute, held in the Crystal Palace, a square piano that was constructed after a new system, and which was awarded, by the *unanimous* verdict of the Jury, the first prize, viz., a gold medal.

This new invention, and the pianos built on this system, achieved so great a success that Messrs. STEINWAY & SONS received at every art exhibition, at which they took part as exhibitors, the first prize ; and the new method of construction was soon regarded, by nearly all piano-makers, as the standard one, and hence was more or less imitated by them.

The business of the firm continued to increase with such marvelous rapidity, that in 1858 the firm was compelled to purchase a large plot of ground, on which to erect a factory proportionate to the gigantic demands on their manufacturing ability. This building was erected in 1859 and occupied in 1860. In 1863 it was found necessary to add the southern wing, by which the building was extended to its present colossal proportions. In the meantime the warerooms remained in Walker street, these being brought into connection with the factory, located at a distance of three miles and a half, by a magnetic telegraph, erected expressly for the firm.

The improvements which had been made in such continuous succession, since 1855, by Messrs. STEINWAY & SONS, and for which they had obtained patents, extended also to the manufacture of grand pianos. In these latter instruments an entirely new system of construction was introduced, with such unqualified success, that they were very soon extensively used in the concert room and by musical people generally.

Theodore Steinway, in Brunswick, at the same time made pianos of the newly invented construction, on the model of those manufactured by his father and brothers in New York, and as early as the season of 1860-'61, many renowned pianists performed on these new grand pianos at their concerts in Germany.

MESSRS. STEINWAY & SONS have received for their pianos, from the year 1855 to 1862, at the leading industrial exhibitions in the United States, no less than thirty-five first prize medals ; and at the World's Fair, in London, in 1862, the pianos there exhibited by them received the highest recognition and were honored by the award of a first prize medal.

The New York warerooms of the firm had become the rendezvous of leading artists and connoisseurs, and were soon found totally insufficient in accommodation for the large dimensions the business had reached. In 1863 Messrs. STEINWAY & SONS resolved to erect new warerooms in that part of the city which promised to become the centre of New York art life ; hence, they selected a locality in East Fourteenth street, between Union Square and the Academy of Music (Italian Opera House), on which their present magnificent marble palace was erected, and in which the pianos made by the firm are now sold. A plot of ground, in the rear of this building, extending through to Fifteenth street, was also purchased by them, which was 100 feet in width by 125 feet in depth.

Whilst the rapid growth of the business of the firm continued unabated, great private misfortunes fell upon them, two members of the firm dying in quick succession. Henry, the third son, who had been in delicate health for several years, died on the 11th of March, 1865, and Charles, the second son, whilst on a European tour, died in Brunswick, on the 31st of the same month and year, of typhoid fever. In consequence of these misfortunes, Theodore, the eldest son, gave up his manufacturing business in Brunswick and became a partner in the New York firm ; thus the business was continued by Henry Steinway, the father, and his three sons, William, Theodore, and Albert, the success of their efforts being even greater than that previously achieved.

In order to satisfy a long felt and oft proclaimed want, and to meet the demands of the art interests of the American metropolis, the firm erected, in the rear of their marble palace on Fourteenth street (on the plot of ground previously alluded to as purchased by them), a grand concert hall, 123 feet long, 75 feet wide, and 42 feet high, with convenient seating capacity for two thousand persons.

This hall, styled "Steinway Hall," is furnished with a fine organ, and is not only one of the largest, but, according to the unanimously expressed opinions of artists, experts, and the general public, the most perfect hall, in its acoustic qualities, in the United States.

Henry Steinway, the father, who, for several years past, had retired from active business, leaving its management exclusively to his sons, though he superintended the erection of "STEINWAY HALL," died February 7, 1871, after a short illness, aged seventy-four years.

By virtue of his abilities and his inborn strength of character, he, an orphan boy, became one of the greatest manufacturers in his industry, not only of his own country, but of the world, and died universally regretted and lovingly remembered by all who had known him, as was evidenced by the many kindly obituaries which appeared at the time of his death.

Following the example of their revered father, the three surviving sons, Theodore, William and Albert, industriously toiled on in their several spheres, as is evidenced by a number of letters patent which bear their names and proclaim their industry ; and also, by the further extension of their business and the erection of their new factories at Astoria (opposite to One Hundred and Twentieth street, New York) ; all these operations have been inaugurated since the year 1872.

Within this short space of time, and in addition to these building operations, a new town has been laid out on the four hundred acres belonging to the firm, and more than one hundred dwelling-houses have been built. The principal or main street, more than a mile long, has been named Steinway avenue, and a plot of ground, sufficiently large to contain all the various factory buildings, has been reserved for future extensions in that direction.

It may not be amiss, in concluding this chapter, to mention that three intelligent young men, grandsons of the late Henry Steinway, Sr., are now preparing themselves to take an active share in the management of the manufacturing and mercantile interests of the firm.

Partly under the guidance and advice of the present representatives of the firm, their uncles, and partly under instruction from efficient foremen, they serve their apprenticeship, and practically have to learn the work in every department of the factory, and there is abundant hope that they will shortly be of material assistance in the administration and control of the affairs of the firm.

MEDALS, AWARDS, AND HONORARY DISTINCTIONS,

CONFERRED UPON

STEINWAY & SONS.

THE inception and construction of the piano of the present day requires not only a thorough study of the sciences of acoustics and physics, but also of the mechanical arts; when the really surprising achievements in this branch of art industry are considered, we may be pardoned if we claim that it has been raised above the level of purely mechanical art, and may be classed as one of the finer arts.

The many distinguished men who were appointed as jurors at the various European and International exhibitions, were selected on account of both their scientific and artistic qualifications, their characters and positions, and were consequently eminently fit to be judges of the productions of our art. As a natural sequence, the medals and prizes conferred by such thoroughly competent judges are vastly increased in importance and significance.

It is owing to this fact, in connection with the endorsement of STEINWAY'S inventions and original systems of construction, by these eminent men, in their official character as special or group jurors, at International exhibitions, that STEINWAY & SONS place such very high value upon the various awards thus made to them.

From among the many medals, more than thirty, awarded to STEINWAY & SONS, at American exhibitions, we only select and enumerate those that mark an epoch of progress, and abstain from mentioning those received at local and smaller fairs.

In March, 1855, STEINWAY & SONS exhibited publicly, for the first time, on the occasion of the Metropolitan Mechanics Institute Fair, at Washington, D. C., and were awarded



THE FIRST PRIZE MEDAL

FOR THE

BEST TWO AND THREE STRINGED

SQUARE PIANOS.



In November, 1855, they received the First Gold Medal for Square Pianos, in the Exhibition of the American Institute, held at the Crystal Palace, New York.



FIRST GOLD MEDAL,
 AMERICAN INSTITUTE FAIR,
 AT THE
 CRYSTAL PALACE, NEW YORK, 1855.



The Jurors at this Fair were :

WILLIAM MASON,	- - - - -	Pianist and Composer.
CHARLES B. SEYMOUR,	- - - - -	Art and Musical Critic, New York Times.
WILLIAM SAGE,	- - - - -	Teacher of Church Music, New York.
THEODORE HAGEN,	- - - - -	Editor Musical Review, New York.
HERMANN A. WOLLENHAUPT,	- - - - -	Pianist and Composer.

No less than thirty-five first premiums, gold and silver medals, were awarded to STEINWAY & SONS during the period from 1855 to 1862, at the principal fairs in this country, the more important of which were those of the Maryland Institute, Baltimore, and those held in Cincinnati, Chicago, St. Louis, Detroit, etc.

At the Great International Exhibition, London, 1862, STEINWAY & SONS were awarded one of the prize medals for grand and square pianos with patented overstrung scale, the strings spread in fan-like shape, and with patent agraffe arrangement. The medals there conferred were all of the same value, and in the official list they were arranged in alphabetical order; but we extract the following passage from the Official Report of William Pole, Reporter of Class XVI. :

“In making the awards for pianofortes, the jury have felt a difficulty arise from the medals being all of the same value, which compels them to award apparently the same degree of honor to any merit shown by a small maker, that they would to the most successful performance of the first manufacturers in Europe.

“The rules established by the commissioners do not warrant any special awards being given, but the jury consider they will not be exceeding their powers in placing certain makers at the head of their list, with notices more full and special than those which follow.”

The jury then designated those who deserve this distinction, from among the three hundred and two exhibitors—STEINWAY & SONS being so distinguished for the United States. The report then continues as follows :

“Messrs. STEINWAY & SONS have specially been awarded a medal for *powerful, clear and brilliant* tone of piano, with excellent workmanship shown in a grand piano and a square piano of very large dimensions.”



FIRST PRIZE MEDAL,
INTERNATIONAL WORLD'S EXHIBITION, LONDON, 1862,

Awarded to STEINWAY & SONS, in Class XVI. (Musical Instruments), by the following Jury:

WM. STERNDALE BENNETT, MUS. DOC.,	- - - LONDON,	-	Professor of Music, University of Cambridge.
J. R. BLACK, M. D.	- - - UNITED STATES,		
RIGHT HON. SIR GEO. CLERK, F. R. S., CHAIRMAN,	EDINBURGH,	-	Chairman of Royal Academy of Music.
FETIS, DEPUTY CHAIRMAN,	- - - BELGIUM,	-	} Member of the Department of Fine Arts, Royal Academy of Belgium; Director of the Royal Conservatory of Belgium.
LISSAJOUS,	- - - FRANCE,	-		Professor of Physics to the Lycenn of St. Louis.
REV. SIR F. GORE OUSELEY, BART., MUS. DOC.,	OXFORD,	-	Professor of Music, University of Oxford.
ERNST PAUER,	- - - AUSTRIA,	-	Professor of Music.
WM. POLE, MUS. B., F. R. S., SECRETARY,	- - - LONDON,	-	Professor of Civil Engineering, University of London.
J. SCHIEDMAYER,	- - - GERMANY,	-	Musical instrument maker.
EARL OF WINTON, G. C. H.,	- - - LONDON,	-	
HENRY WYLDE, MUS. DOC.,	- - - LONDON,	-	Professor at the Royal Academy of Music.

At the Exposition Universelle, Paris, 1867, STEINWAY & SONS were awarded a *Gold Medal*, and were placed *first* upon the list as recipients of awards for the United States. As herebefore stated, the medals at the London Exhibition, 1862, were of equal value for all exhibitors, arranged in alphabetical order, the Jury describing in words the qualities and the distinct points for which the awards were conferred. In Paris, however, a different mode was adopted. A stated

number of gold, silver, and bronze medals and honorable mentions were to be given as prizes, which were allowed or voted for that purpose by the Imperial Commission.

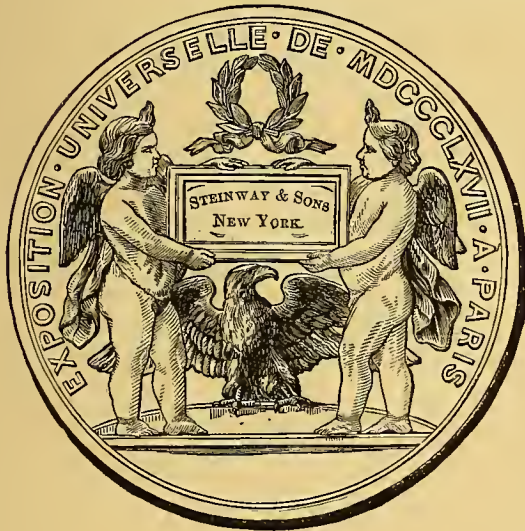
According to an Imperial decree the number of Gold medals was limited to 900; and inasmuch as for certain groups more medals had been asked and allowed than for others—no two groups receiving an equal number—the Jurors were instructed to classify the names of the exhibitors according to the merit and distinction of the articles exhibited, without reference to nationality, and *not in alphabetical order*.

STEINWAY & SONS were placed *first*, and at the head of the list for the United States, by the International Jury. Had they been the last upon the list of recipients of Gold Medals, the next following exhibitor on the list, according to merit, would have received but a Silver Medal.

Extract from the Official Report, Paris, 1867.

“The Pianos of Messrs. Steinway & Sons are endowed with the splendid sonority, and that seizing largeness and volume of tone hitherto unknown, which fills the greatest space. Brilliant in the treble, singing in the middle, and formidable in the bass, this sonority acts with irresistible power on the organs of hearing. In regard to expression, delicate shading, variety of accentuation, the instruments of Messrs. Steinway have over those of their competitors an advantage which cannot be contested. The pianist feels under his hands an action pliant and easy, which permits him at will to be powerful or light, vehement and graceful. These pianos are at the same time the instrument of the virtuoso, who wishes to astonish by the eclat of his execution, and of the artist who applies his talent to the music of thought and sentiment bequeathed to us by the illustrious masters; in one word, they are at the same time the pianos for the concert room and the parlor, possessing an exceptional sonority.”

EXPOSITION UNIVERSELLE,



PARIS, 1867.

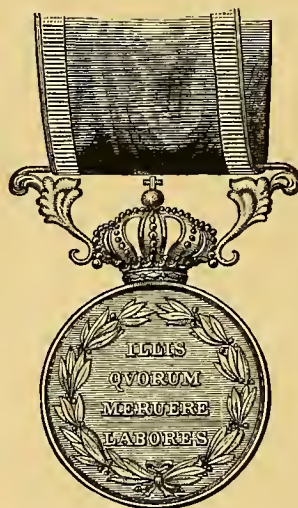
INTERNATIONAL JURY, CLASS X., MUSICAL INSTRUMENTS.

GENERAL MELINET, Senator, - - - - -	PRESIDENT, - - - - -	FRANCE.
GEORGE KASTNER, Member of the Institute, - - - - -	VICE-PRESIDENT, - - - - -	FRANCE.
AMBROISE THOMAS, Member of the Institute, - - - - -	- - - - -	FRANCE.
FETIS, Director of the Royal Conservatoire of Brussels, - - - - -	REPORTER, - - - - -	BELGIUM.
EDW. HANSLICK, Professor of the University of Vienna, - - - - -	- - - - -	AUSTRIA.
J. SCHIEDMAYER, Piano Manufacturer, Stuttgart, - - - - -	- - - - -	GERMANY.
LORD FITZGERALD, - - - - -	- - - - -	ENGLAND.
HONORABLE EGGERTON, - - - - -	- - - - -	ENGLAND.

Shortly after the Paris Universal Exposition, His Majesty, King Charles XV. of Sweden, conferred upon STEINWAY & SONS one of the most distinguished honors, viz., the award of the GREAT NATIONAL GOLD MEDAL with CROWN and RIBBON, which can only be awarded for artistic and scientific merit by consent of the Council, and which is one of the highest prizes in the gift of a European government. The occasion was the furnishing of a STEINWAY grand piano—a fac simile of those exhibited at the Paris Exposition—for the concert hall of the Royal Academy at Stockholm. The success achieved by this American production, in this branch of art industry, was without parallel in the history of the country.

At the anniversary celebration of the Royal Academy of Music, Stockholm, December 14, 1867, His Royal Highness Prince Oscar, its President, delivered the festive oration, in which he treats exhaustively on the nature of tones and their component parts, showing an intimate acquaintance with and comprehension of Helmholtz's treatise "On Tone Sensations," which he analyzes very minutely and in a scientific manner, and manifesting a thorough and earnest study of the various sciences connected therewith. He continued as follows: "It affords me great pleasure on this important occasion to announce, both to the Academy and to the numerous lovers of music here assembled, that another musical instrument is this evening to reveal its splendid tones here for the first time. Among the numerous competitors at the Universal Exposition in Paris, which has just closed, the North American pianofortes in general, and those of STEINWAY & SONS in particular, have taken an undisputed place of honor, as well as for the large volume and their charming quality of tone. The piano standing here—whose indwelling powers, like the slumbering child in Heimer's harp, in our ancient northern legends, waits only for the life-giving sign—is fellow to the best and most expensive, like those lately exhibited by STEINWAY & SONS."

NATIONAL
AWARDED
KING CHARLES XV.
TO
STEINWAY & SONS,



GOLD MEDAL,
BY HIS MAJESTY,
OF SWEDEN AND NORWAY,
NEW YORK.

In an autograph letter from His Royal Highness Prince Oscar (now the king of Sweden) dated Stockholm, January 29, 1868, addressed to STEINWAY & SONS, His Highness, after referring to the safe arrival of the concert grand, continues as follows:

"Nations and countries have their geographical limits, which certainly have their historical reasons, and may have their actual necessity. But social intercourse and friendly feelings are international; they extend far beyond these limits and will do it more and more every day with the progress of civilization. Art is essentially cosmopolitan, its realm knows no boundaries.

“Your beautiful instrument has, of course, by its noble qualities, excited general admiration at the solemn yearly meeting of December last, when it was heard for the first time, and it will, I am sure, in a very effective way, benefit the instruction on the pianoforte at our conservatory. The Royal Government has, at my request, pleased to decree you the National Gold Medal, bearing the inscription :

‘Illis quorum meruere labores,’

and the Royal Academy has, in its first general meeting this year, by unanimity, called your Mr. Theodore Steinway to take a place as a member of its honorable congregation.

“Believe me, Sirs,

“Yours, most sincerely,

“OSCAR,

“Prince of Sweden and Norway.”

The “*Société Libre des Beaux Arts*,” of Paris, in one of its sessions, had passed the resolution to appoint a Commission (independent of the International Jury), for the purpose of examining and reporting upon the most meritorious products of art and art industry, at the International Exposition of 1867.

In its public session of July 16, 1867, Messrs. STEINWAY & SONS were awarded the Honorary Prize Medal for the best pianos exhibited, and Mr. C. F. Theodore Steinway was elected foreign member of this distinguished society.



SOCIÉTÉ LIBRE DES BEAUX ARTS.

HONORARY PRIZE MEDAL

AWARDED TO

STEINWAY & SONS



For the EXCELLENCE and the SUPERIORITY of their Pianos.

In the Thirty-second Annual Report, 1867, of the Society, we find, in Bulletin No. 823, the report of Mr. le Marquis d'Aoust, President of the musical department, in which he discusses the new and original inventions represented in STEINWAY'S pianos, and from which we quote :

“These instruments possess a very singing, very pure, and very beautiful tone, and, as we believe, combined to all other desirable qualities. These works of art of the Messrs. STEINWAY, we must further add, are of the greatest interest to scientific men, and deserve the minutest examination on the part of the Central Committee of the Society of Fine Arts, inasmuch as they recommend themselves by their volume and sonority of tone, as well as by their construction and solidity. The Pianos of Messrs. STEINWAY appear to me, as well as to all the artists who have tried them, superior to all that have been made to this day in the entire World.”

Another honorary distinction was conferred upon STEINWAY & SONS on the part of the Royal Academy of Arts, Berlin, and which is awarded by this eminent corporate body solely for really remarkable and exceptional improvements. In a full session of the Royal Academy, November 29, 1867, one of STEINWAY'S concert grands, similar to those exhibited in Paris, was subjected to a minute and critical examination.

The Royal Musical Directors to the Prussian Court, Messrs. Taubert and Dorn, and Music Director Schneider, played upon the instrument before the assembled Senate and members of this distinguished corporate body, after which, Mr. Theodore Steinway delivered a discourse on the influence of the compression of the resonance matter, explaining, also, the operations of the apparatus for compression invented by himself and his co-operator, William Steinway; he further described the construction of the grand piano and the physical laws applied to it.

The following patent was transmitted, respectively, to each of the two members of the firm :

“The Royal Academy of Arts, in the session of the Senate of January 4, *a. a.*, has elected the pianoforte manufacturers—

THEODORE STEINWAY,	-	-	-	-	-	NEW YORK,
WILLIAM STEINWAY,	-	-	-	-	-	NEW YORK,

Academical members, in recognition of their meritorious productions.

“IN WITNESS WHEREOF, this present document has been executed and embossed with the seal of the Royal Academy of Arts.

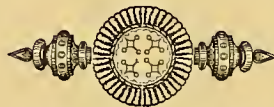


BERLIN, *February 5, 1868.*

By order of the Senate :

ED. DAEGE.

O. F. GRUPPE.”



THE AMERICAN PIANO TRADE.

The rapid growth of the manufacture of pianos in the United States is a marvel alike to those who study the industrial resources of our own country, and those European makers who once nearly monopolized the piano trade of America. Now the reverse is the case : instead of being large importers, we are large exporters of pianos, and since the Paris Universal Exposition of 1867, the fame of American pianos, especially those of STEINWAY & SONS' make, has spread throughout the length and breadth of Europe, and large numbers of STEINWAY Grand and Upright Pianos are now annually sold in London, Hamburg, St. Petersburg, Moscow, Odessa, Madrid, and other European art centres.

It will be seen by the list of piano firms given below, that they are residents of New York, Boston, and Baltimore, and that the aggregate total of their sales amounts to \$5,248,577.

Besides those given in tabular form, there are a number of small firms in the three cities named, and also several in Philadelphia, Buffalo, Albany, Indianapolis, St. Louis, and even San Francisco, which will increase the total amount of annual production and sales of pianos in the United States to fully 25,000 instruments, netting over *seven millions of dollars* (\$7,000,000).

New York, the Empire City of the Union, possesses, in the mammoth manufactory of Messrs. STEINWAY & SONS, not only the most extensive establishment in the United States, but no doubt the largest in the world, as shown by the fact of this firm returning, as made and sold during the year 1869, no less than 2,200 pianos, for the aggregate sum of \$1,205,463, while for the year 1872, Messrs. STEINWAY & SONS manufactured and sold 2,410 pianofortes, the proceeds of which reached the sum of \$1,352,000, which has been their average yearly production since that time.

Boston possesses the second largest piano manufactory in the United States, and Baltimore has the third.

The following statistics of the gross amount of sales of new pianos made and sold by the twenty-six most prominent piano-makers in the United States, for and during the year 1869—the amount being given by each manufacturer under oath, and taxes paid thereon—were officially published by the New York Tribune of March 15, 1870 :

SALES FOR THE YEAR 1869.

Names	Location.	Amounts.	Names.	Location.	Amounts.
STEINWAY & SONS,	- New York,	\$1,205,463	DECKER BROTHERS, -	- New York,	118,000
CHICKERING & SONS,	- Boston,	822,402	HAZELTON BROTHERS, -	- New York,	104,661
WILLIAM KNABE & CO.,	- Baltimore,	383,511	GROVESTEEEN, FULLER & CO.,	New York,	96,825
HAINES BROTHERS,	- New York,	287,051	STIEFF BROTHERS, -	- Baltimore,	87,470
WILLIAM P. EMERSON,	- Boston,	232,779	MARSHALL & MITTAUER, -	- New York,	80,172
ALBERT WEBER, - -	- New York,	221,444	J. & C. FISCHER, - -	- New York,	69,308
JOSEPH P. HALE, - -	- New York,	207,355	LINDEMAN & SONS, - -	- New York,	62,980
HALLET, DAVIS & CO.,	- Boston,	178,549	RAVEN, BACON & CO., -	- New York,	57,531
C. F. LIGHTE & CO., -	- New York,	155,000	CALENBERG & VAUPEL, -	- New York,	57,387
ERNEST GABLER, - -	- New York,	149,484	GAEHLE & CO., - -	- Baltimore,	44,903
H. F. MILLER, - -	- Boston,	148,359	CENTRAL PIANO COMPANY,	New York,	44,000
GEORGE STECK & CO.,	- New York,	145,500	KRANICH, BACH & CO., -	- New York,	42,622
HALLET & CUMSTON,	- Boston,	131,998			
G. W. VOSE, - - -	- Boston,	118,413			
					\$5,248,577

ALPHABETICAL LIST OF EMINENT MUSICAL ARTISTS.

WE append an alphabetical list of such artists who have used and prefer to use STEINWAY & SONS' pianofortes, and have addressed complimentary letters to our firm, which are valued by us as honorary distinctions.

We confine ourselves, for want of room, to the reproduction of one letter from the very fountain-head in the treatment of the pianoforte—in his matchless gift as composer and virtuoso—of Dr. Franz Liszt—which speaks for itself, and at the same time illustrates the spirit in which our products are valued by the artistic world.

Messrs. STEINWAY & SONS:

WEIMAR, September 3, 1873.

GENTS—The magnificent Steinway Grand Piano now stands in my music room, and presents a *harmonic totality of admirable qualities*, a detailed enumeration of which is the more superfluous, as this instrument fully justifies the world-wide reputation that for years you have everywhere enjoyed.

After so much well-deserved praise, permit me to also add my homage, and the expression of my undisguised admiration, with which I remain,

Very sincerely yours,

FRANZ LISZT.

ABT, FRANZ, Germany.
 ASANTCHEWSKY, M. VON, Russia.
 AUBER, D. F. E., France.
 BENDEL, FRANZ, Germany.
 BERGE, DR. WILLIAM, United States.
 BERGMANN, CARL, United States.
 BERGNER, FREDERICK, United States.
 BERLIOZ, HECTOR, France.
 BERNARD, M., France.
 BILLET, ALEXANDER, Switzerland.
 BIEDERMANN, JULIUS, United States.
 BOECKELMANN, BERNHARDUS, United States.
 BONAWITZ, JOHANN HEINRICH, Germany.
 BOSCOVITZ, FREDERICK, United States.
 BRAGA, GAETANO, France.
 BRANDEIS, FREDERICK, United States.
 BREUNING, F. VON, United States.
 BRONSART, INGEBORG VON, Germany.
 BUCK, DUDLEY, United States.
 BUSSMEYER, HUGO, Brazil.
 CARRENO, TERESA, United States.
 CERVANTES, IGNAZIO, Cuba.
 CLAUS-CAVARDI, MAD. W., France.
 COMETTANT, OSCAR, France.
 CUTLER, DR. HENRY L., United States.
 DAMROSCH, DR. LEOPOLD, United States.
 DANNREUTHER, EDWARD, England.
 DAVID FELICIEN, France.
 DE FONTAINE, MORTIER, France.
 DELAHAYE, AUGUSTE, France.
 DE MEYER, LEOPOLD, Austria.
 DENCK, JOSEPH HART, United States.
 DIEMER, LOUIS, France.
 DORN, HEINRICH, Germany.
 DORE, GUSTAVE, France.
 DREYSCHOCK, ALEXANDER, Russia.
 EISFELD, THEODORE, Germany.
 ELWART, A., France.
 EHRLICH, A., Germany.
 ESSIPOFF, MME., ANNETTA, Russia.
 FAIST, H., Germany.
 FISSOT, HENRY, France.
 GEVAERT, F. A., Belgium.
 GAUL, CECILIA, United States.
 GODDARD, MME. ARABELLA, England.
 GOLDBECK, ROBERT, United States.
 GOUNOD, CHARLES, France.
 GRAEVER-JOHNSON, MME., Belgium.
 GUION, EMIL, United States.

HARTMANN, F., United States.
 HELLER, ROBERT, United States.
 HELLER, STEPHEN, France.
 HELMHOLTZ, PROF. H., Germany.
 HENSELT, ADOLPHE, Russia.
 HEUGEL, HENRY, France.
 HILL, U. C., United States.
 HOFFMANN, EDWARD, United States.
 HOHNSTOCK, CARL, Germany.
 INTEN, FERDINAND VON, United States.
 JAELL, ALFRED, France.
 JAMESON, J. S., United States.
 JOACHIM, JOSEPH, Germany.
 KALIWODA, W., Germany.
 KETTERER, EUGENE, France.
 KLAUSER, KARL, United States.
 KREBS, MME. MARIE, Germany.
 KREISSMANN, AUGUST, United States.
 KRUEGER, WILHELM, Germany.
 KULLACK, DR. THEODORE, Germany.
 LACK, France.
 LACOMBE, LOUIS, France.
 LASARE, MARTIN, Belgium.
 LAVIGNAC, France.
 LEBERT, PROFESSOR, Germany.
 LEFEBURE-WELY, H., France.
 LESCHETITZKY, PROFESSOR, Russia.
 LIEBLING, MAX, United States.
 LIEBLING, S., United States.
 LUCKHARDT, MISS LINA, United States.
 MAGNUS D., France.
 MAILLET, E., France.
 MANN, JEAN, United States.
 MARMONTEL, A., France.
 MARTIN, MME. JOSEPHINE, France.
 MASON, DR. WILLIAM, United States.
 MEHLIG, MISS ANNA, Germany.
 MILLS, S. B., United States.
 MILLS, WM. F., United States.
 MORGAN, GEO. W., United States.
 MOSCHELES, J., Germany.
 MOSENTHAL, JOSEPH, United States.
 MUZIO, E., United States.
 NAPOLEON, ARTHUR, Portugal.
 PAPE, WILLIE B., England.
 PAREPA-KOSA, MME. E., England.
 PATTISON, JOHN N., United States.

PAUR, AGRICOL, United States.
 PECHER, WILLIAM, United States.
 PEARSON, PROFESSOR, United States.
 PEASE, ALFRED H., United States.
 PINNER, MAX, Germany.
 PLAIDY, LOUIS, Germany.
 PRUCKNER, DIONYS, Germany.
 RAVINA, HENRY, France.
 REINECKE, CARL, Germany.
 REMMERTZ, MARTHA, Germany.
 RICHTER, CARL, Germany.
 RITTER, FREDERIC LOUIS, United States.
 RITTER, THEODORE, France.
 RUBINSTEIN, ANTOINE, Russia.
 RUBINSTEIN, NICHOLAS, Russia.
 SAAR, WILLIAM, United States.
 SAINT-SAENS, CAMILLE, France.
 SCHARFENBERG, WILLIAM, United States.
 SCHILLER, MME. MADELINE, United States.
 STERLING, MME. ANTOINETTE, United States.
 STIGELLI, GIORGIO, Germany.
 STOEGER, ERNEST, France.
 TAUBERT, WILHELM, Germany.
 TELEFFSEN, —, Sweden.
 THOMAS, ANBROISE, France.
 THOMAS, THEODORE, United States.
 TIMM, HENRY C., United States.
 TITIENS, MME., TERESA, England.
 TOPP, MISS ALIDA, Germany.
 TRAUTMANN-JAELL, MME. MARIE, France.
 VAN BOOM, I, Sweden.
 VIEUXTEMPS, HENRY, Belgium.
 VOGT, JEAN, Germany.
 WAGNER, RICHARD, Germany.
 WALLACE, WM. VINCENT, United States.
 WARREN, SAMUEL P., United States.
 WEIKERT, CONSTANTIN, United States.
 WELS, CHAS., United States.
 WENIGE, OSCAR, United States.
 WHITE, SENNOR JOSEPH, Cuba.
 WICHMANN, MISS, Sweden.
 WIENIAWSKY, HENRY, Belgium.
 WIENIAWSKY, JOSEPH, Russia.
 WILLMERS, RUDOLPH, Austria.
 WOLFSOHN, CARL, United States.
 WOLLENHAUPT, BRUNO, United States.
 WOLLENHAUPT, HERMANN A., United States.
 ZUNDEL, JOHN, United States.


 General Assembly of the City of Stockholm
 awarded to
Steinway & Sons
 for a BRASS
 REGISTERED MEDALS

 ACADEMICAL HONORS
 bestowed on the
 Royal Academy of Music
 STOCKHOLM SWEDEN
 1868.




 ACADEMICAL HONORS
 bestowed on
Steinway & Sons
 for the
 PIANOFORTES
 made by
 Steinway & Sons
 by the
 Prussian Royal Academy
 of Fine Arts
BERLIN
 1868

SAW MILL, IRON & BRASS FOUNDRY & METALWORKS AT ASTORIA, L. I.



STEINWAY HALL 142 ST. N.Y.



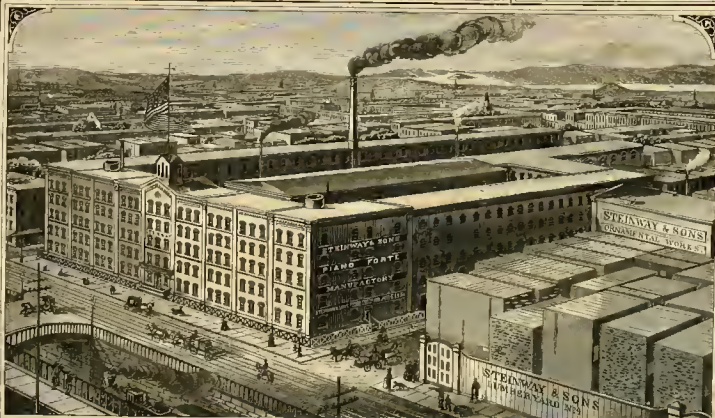
STEINWAY & SONS.
 MANUFACTURERS
 OF
GRAND SQUARE & UPRIGHT PIANOS.

Patented Inventions and Improvements.

1. Patent Agraffe Arrangement Nov. 20, 1868.
2. Patent Steel-string Grand Piano scale and Frame Dec. 20, 1869.
3. Patent Resonator June 5, 1866.
4. Patent Tubular Metallic Action Frame Aug. 16, 1868.
5. Patent Vibrating Sound-board Bridge April 6, 1869.
6. Patent Independent Detached Flirt and Metal Standards Dec. 14, 1869.
7. Patent Ring-bridge on Sound-boards June 6, 1871.
8. Patent Repetition Action May 28, 1872.
9. Patent New Iron Cupola and Flirt Frame May 14, 1872.
10. Patent Grand Duplex Scale Oct. 27, 1874.
11. Patent Tone-sustaining Pedal Oct. 20, 1875.
12. Patent Regulating Action Flirt Oct. 20, 1875.
13. Patent Capo d'Astro Agraffe Oct. 20, 1875.
14. Patent Metal Frame Construction in Grand Pianos Oct. 20, 1875.
15. Design of Metal Frame, with Ornaments, for Grand Pianos Nov. 8, 1875.



STEINWAY HALL 152 ST. N.Y.



STEINWAY & SONS PIANOFORTE MANUFACTORY 4th AVE. & 52nd 53rd STR. NEW YORK.

8

Illustrated **C**atalogue

7

OF

B. F. STURTEVANT'S

PRESSURE **B**LOWERS

AND

Exhaust Fans.



B. F. Sturtevant, Patentee & Manufacturer,

BOSTON.

Illustrated Catalogue

OF

B. F. Sturtevant's

Pressure Blowers

AND

Exhaust Fans.



SMITH & PORTER, PRINTERS, BOSTON.

1870.

To My Customers.

I desire to extend thanks for the confidence and patronage extended to me for the last five years, during which time I have put in operation about *four thousand* (4000) of my PRESSURE BLOWERS and EXHAUST FANS, which are in all cases, so far as I know, working with perfect success. If such is not the case with any of them, and the purchasers will notify me of the fact, I will give them immediate personal attention, and make them perfectly satisfactory or refund the money.

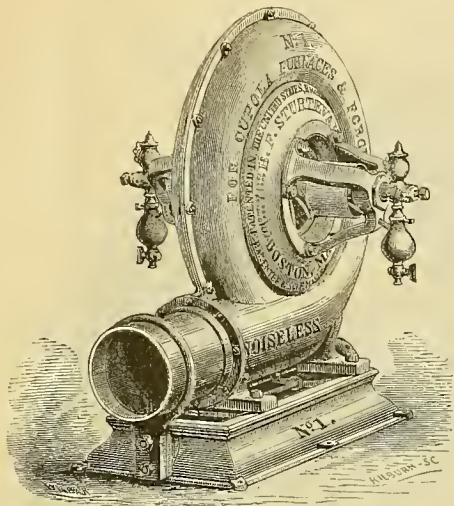
In presenting this circular, I have endeavored to give my customers and the public generally, all the figures and exact data which I have obtained, that will be of service to them in the selection and running of Blowers.

My success in the production of the PRESSURE BLOWER is such that it has taken the place of Rotary and Piston Blowers on Cupola Furnaces, where the strongest and fullest blast is required.

The recent improvements which I have made in the principle, material and mode of construction, have put them far in advance of those I have formerly made.

I guarantee all my work, and give my personal attention to the requirements of my customers.

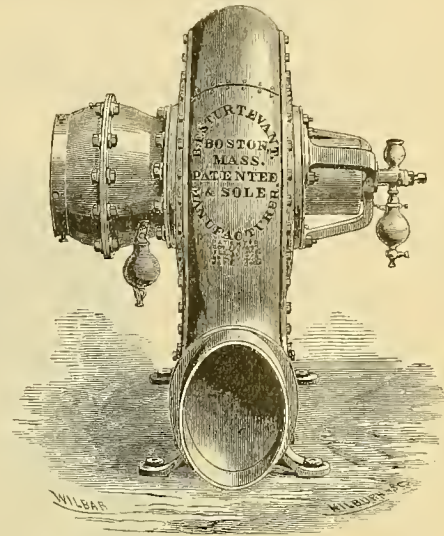
B. F. STURTEVANT.



B. F. STURTEVANT'S
 PATENT
Improved Pressure Blower.

Price List, July 1, 1870.

Number or size of Blower.	Price of Blower with Counter Shaft and Pulleys for two Belts.	Price of blower without counter-shaft and pulleys.	Diam. of drive'g pulleys for two belts.
0	\$38 50	\$35 00	18
1	49 50	45 00	21
2	71 50	65 00	24
3	99 00	90 00	28
4	143 00	130 00	32
5	198 00	180 00	36
6	264 00	240 00	42
7	341 00	310 00	48
8	429 00	390 00	54
9	528 00	480 00	60
10	638 00	580 00	66
11	770 00	700 00	72

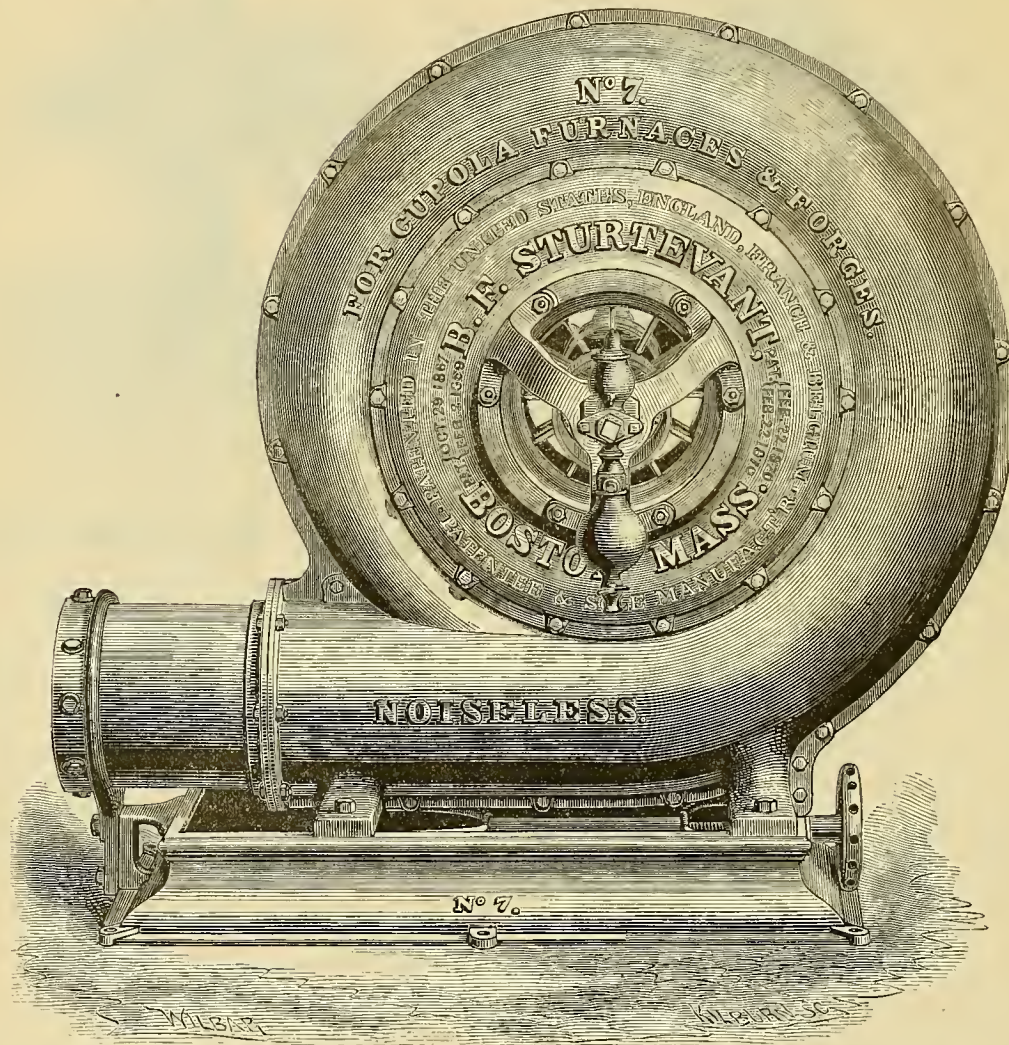


B. F. STURTEVANT'S
PATENT EXHAUST FAN.

Price List July 1, 1870.

Number or Size of Fan.	Price of Fan with Counter-shaft and Pulleys.	Price of Fan without Counter-shaft and Pulleys.	Diameter of Pulleys for driving Fan.
0	\$35 00	\$33 25	.....
1	45 00	42 75	.....
2	65 00	61 75	.....
3	90 00	85 50	.....
4	130 00	123 50	.....
5	180 00	171 00	.....
6	240 00	228 00	.....
7	310 00	294 50	.....
8	390 00	370 50	.....
9	480 00	456 00	.....
10	580 00	551 00	.....
11	700 00	665 00	.....

Cast Steel Pressure Blower.

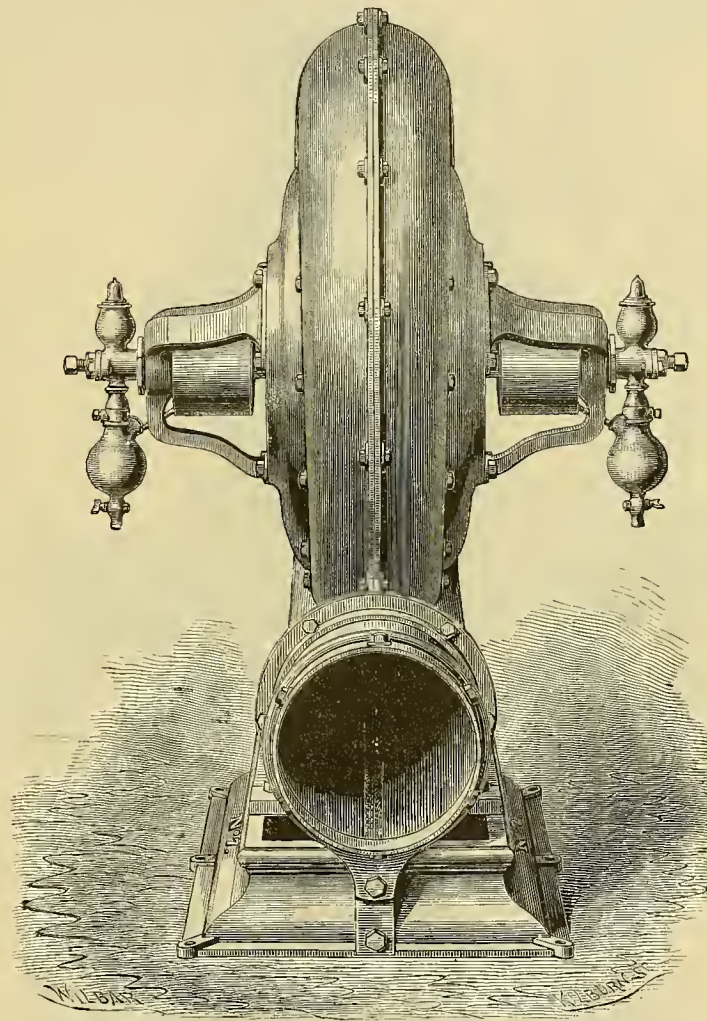


Made expressly for Iron Foundries, and will produce a stronger blast with the same amount of power, than any other blower.

The running parts of this Blower are made of cast steel. The shaft is made of tool steel and tempered. The pulleys are made of cast steel, which possesses superior durability and lightness. The blast wheel is made entirely of cast steel, by means of which it is constructed on a principle which produces the strongest blast with the smallest amount of power.

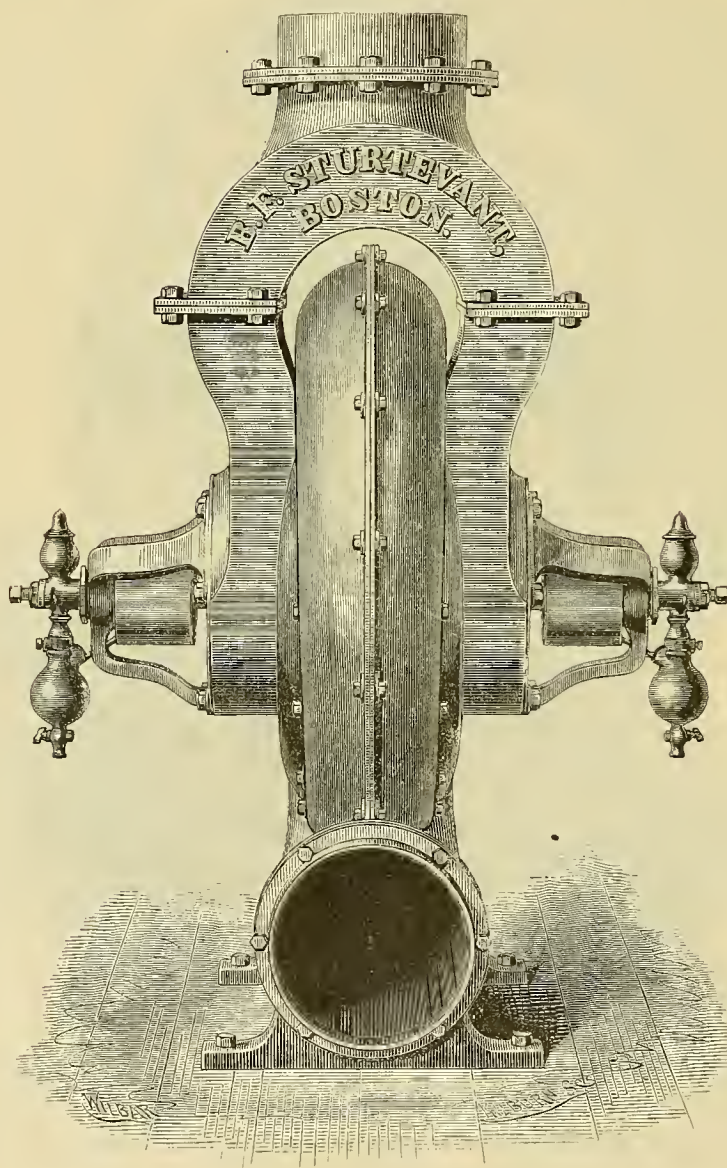
I am putting more labor and expense on the shaft pulleys and blast-wheel of this blower than I formerly put upon the whole blower, although no pains have been spared in fitting up the best tools for manufacturing them.

Front View of
Pressure Blower.

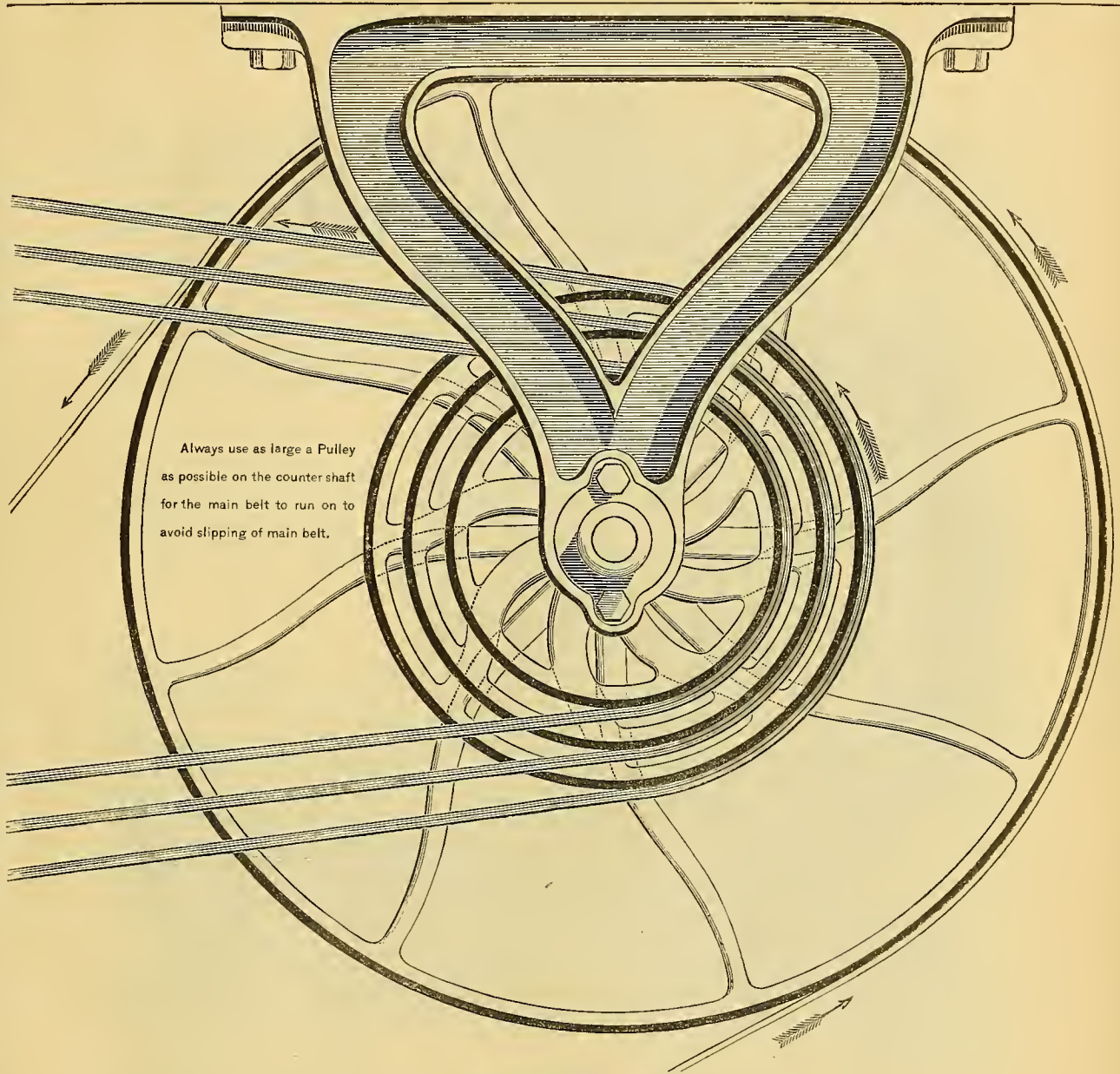


This Blower is adapted for foundries and large forge establishments, and combines the greatest possible degree of durability and economy of power, makes no noise when running at its highest rate of speed, and is manufactured regardless of expense. The materials used in the running parts of these Blowers being the best that can be had. The only parts being exposed to wear are the self-oiling Journal Bearings, (duplicates of which I send with each blower,) consequently the blower will run many years without repairs of any kind. Notwithstanding it is so exceedingly simple, the principles of its construction are thoroughly scientific and mechanical, and this is why this blower so readily supersedes all others,

**B. F. Sturtevant's
Patent Gas Exhauster.**



For use in Gas Works for removing the gas from the retorts to the gasometer, and in Lead Works for forcing carbonic acid gas into the corroding rooms, and also, for use in Chemical Works where any kind of gas is to be distributed.



Always use as large a Pulley
as possible on the counter shaft
for the main belt to run on to
avoid slipping of main belt.

SPEED.

The object of publishing the accompanying engravings in connection with other information on Blowers is to enable parties to avoid mistakes in their calculations for obtaining the requisite speed on Blowers.

In all cases where the purchasers of the Sturtevant Blower fail to realize all that they expected from the Blower, it has been due entirely to a deficiency of speed caused by the slipping of the belts. It is not generally known that a Blower may fall short twenty-five per cent. of the calculated speed and at the same time have all the belts keep their proper places on the pulleys.

The increase or diminution of the pressure or force of blast is greater than the increase or diminution of speed, hence the importance of using proper pulleys and belts.

The main belt should always be of double the thickness of the Blower belt, and the width governed by the diameter of the pulleys and the speed of the Blower.

Power.

In cases where the main shaft runs from 80 to 100 revolutions per minute, and will not take on a large driving pulley, parties oftentimes reduce the small pulley on the counter-shaft in their efforts to obtain the requisite speed on the Blower, so as to afford but very little surface for the main belt, at the same time they have no means of knowing how fast the Blower is running, when perhaps it is falling short from 10 to 25 per cent. of the calculated speed.

This is a very bad mistake, and one that the Inventor and Manufacturer of the Blower is not at all responsible for. A deficiency in the speed of the main shaft should always be made up by the enlargement of the driving-pulleys, so that the requisite amount of belt surface can be obtained on the small pulley on the counter-shaft.

New Belting.

New Belting, such as is generally used for the driving belts, on polished iron pulleys, will only transmit from one-third to one-fifth the power, without slipping, that the same belt will after it has been in use from one to two months. Consequently, it sometimes occurs that the Blower will not perform so well when it is first started up, as after it has run a while.

Thin Belting.

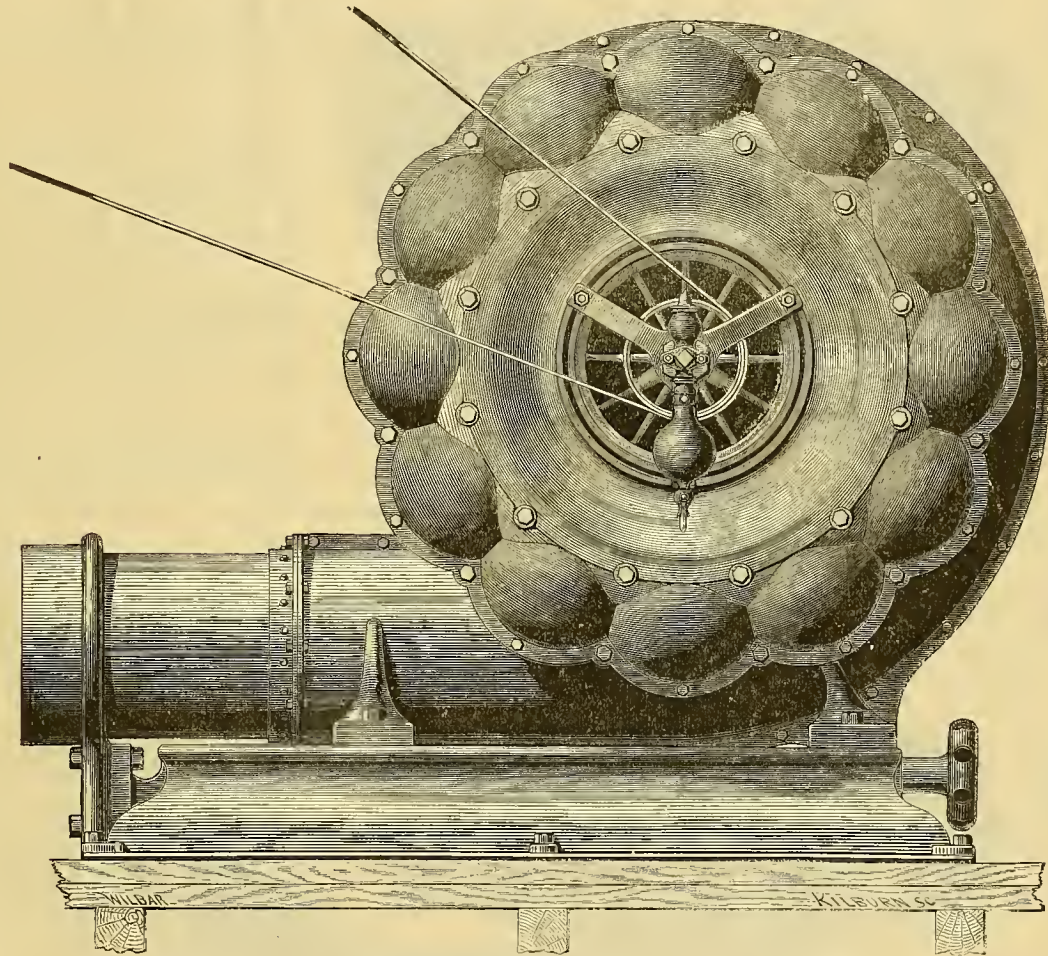
It will be readily seen that the thickness required for any belt depends entirely upon the amount of strain upon it, which is governed by the diameter of the pulley it runs over. For example, if the pulley on the Blower is six inches in diameter, and the driving pulley on the counter-shaft 42 inches, and the belt about four inches wide, the belt cannot possibly be subjected to so great a strain as it might be if the pulleys were both 42 inches, for the reason that the amount of surface on the small pulley is so much less than that on the large. A belt running from a 42 inch pulley to a 12 inch, would need to be one-third heavier, and to an 18 inch, double the thickness of that required to a 6 inch. None of these Blower belts are exposed to the wear and tear of shippers as lathe belts are; all of them run over small pulleys in proportion to the width of the belts. Hence I recommend the accompanying scale of thicknesses of belts in proportion to the widths, the lighter the belt the tighter it hugs the pulley, for the reason that all unnecessary weight of leather tends to lift itself off the pulley when going around it at a great velocity, and some of these belts travel at a velocity of five thousand feet per minute.

Belting, as it is generally manufactured as an article of merchandise, is intended for all purposes for which belting is used; but when parties are desirous of having every thing about the Blower just as it should be, they will see that their belts are made exactly to suit their work.

Special Belts.

Having made a series of experiments with different kinds of leather, made up into belts in different ways, I have been led to adopt a standard of quality of stock, style of making the belt, stuffing, and an adhesive coating for the surface, which is far superior to anything to be found in the usual stocks of belting, and I now have belting of this quality manufactured expressly for each size of Blower, costing about the same per foot as common belting.

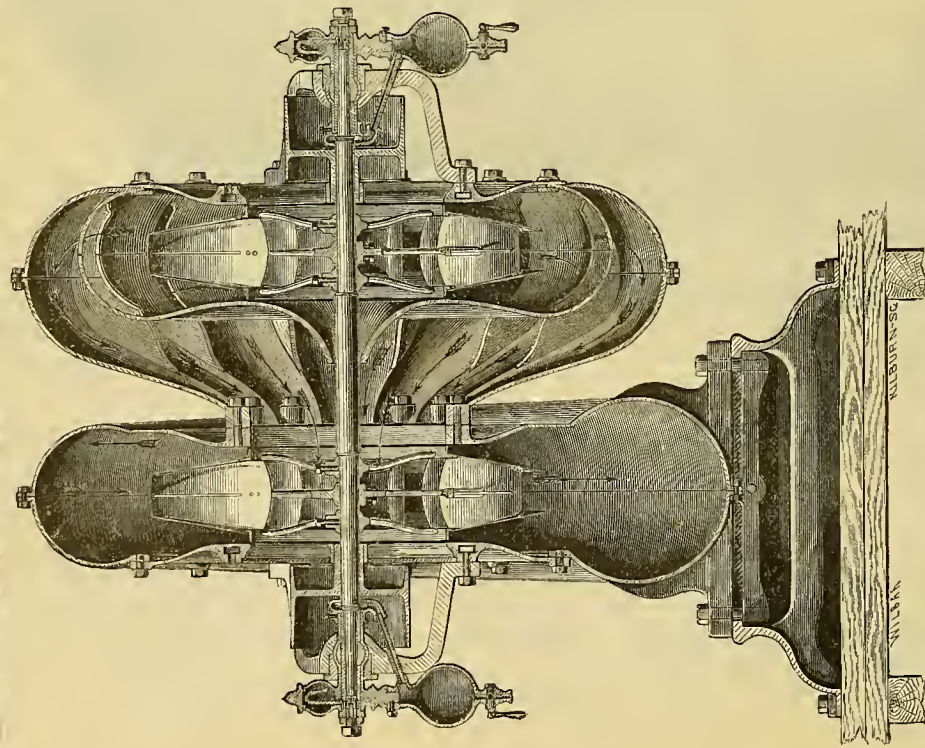
**B. F. Sturtevant's Patent Multiplying or
Double Blower.**



This is one of the oldest inventions in Fan Blowers, and many attempts have been made to make it work, but without success, except so far as attained in the Sturtevant Blower; (few of which are in use.) There is no advantage to be gained except in cases where parties require a pressure of $1\frac{1}{2}$ lbs. or more. No well constructed cupola will work well with more than $1\frac{1}{4}$ lbs. pressure, and this can be had with less power with the single Sturtevant wheel than with two or three wheels. 1 lb. blast is good for 30 tons to a heat in one cupola. Double and triple Blowers are more complicated and costly than single wheel Blowers, far more liable to get out of order, and more difficult to repair.

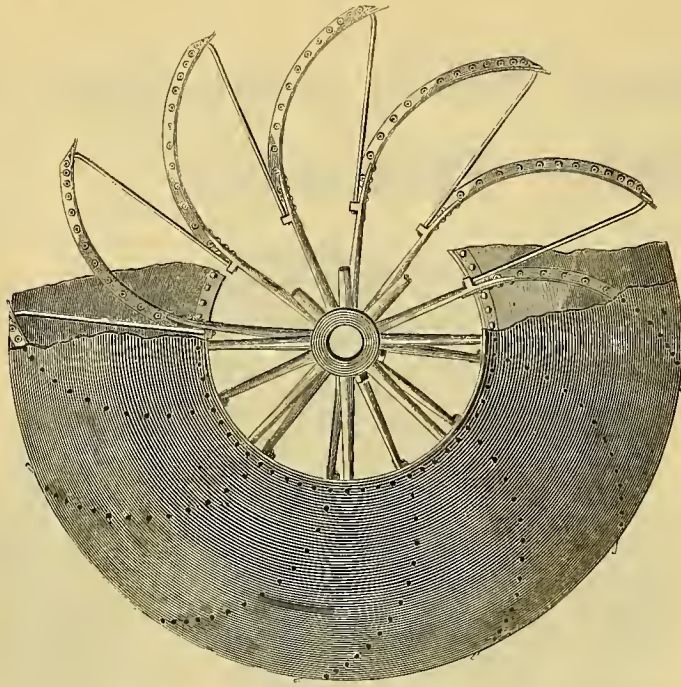
Blowers of this description are made to order for special uses, where very strong blast is necessary.

Sectional Cut of
Sturtevant's Double Pressure Blower.



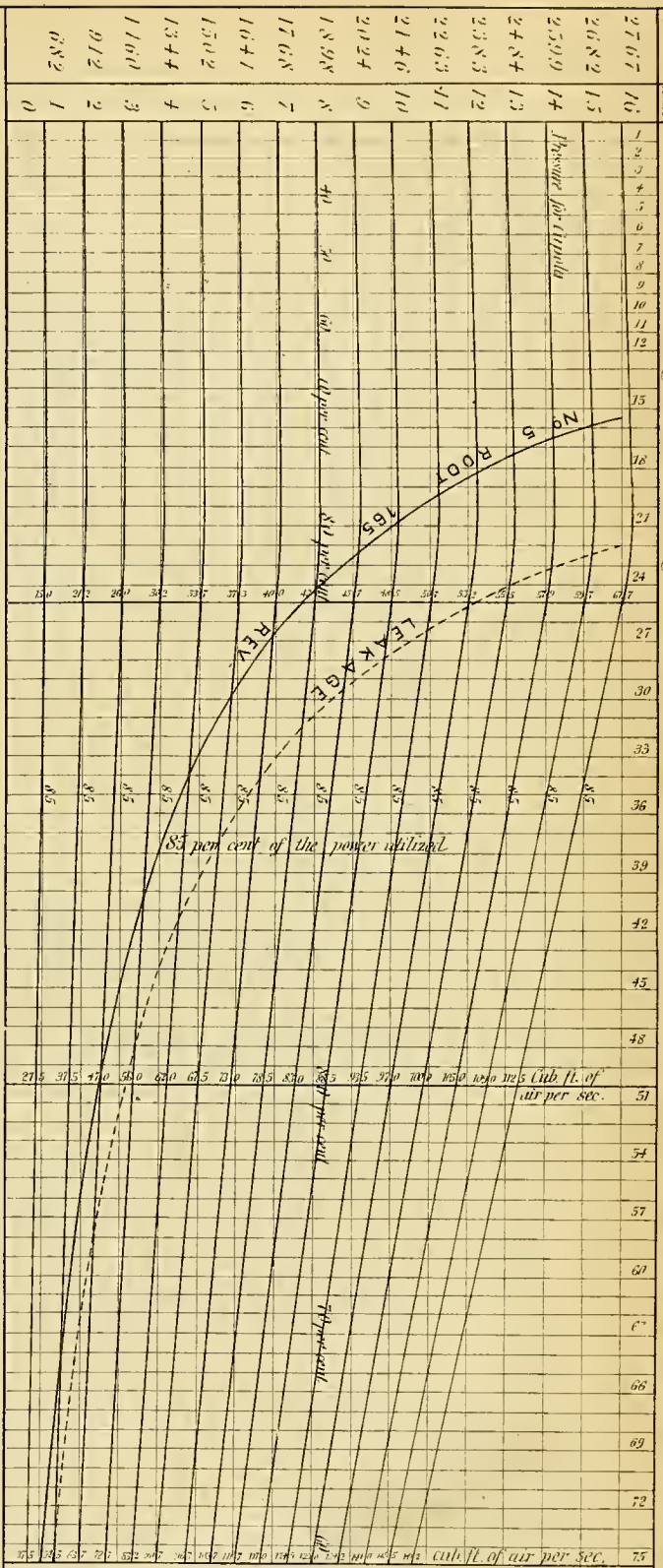
It will be seen, by examining the engraving, that the wind after leaving the first wheel, passes out through the Multiduct Case into the next wheel, which doubles the pressure by giving it a rotary motion, the same as it received from the first wheel. This kind of Blower can be made to work, but cannot succeed for general use in foundries or forge shops.

B. F. Sturtevant's Patent Blast Wheel.



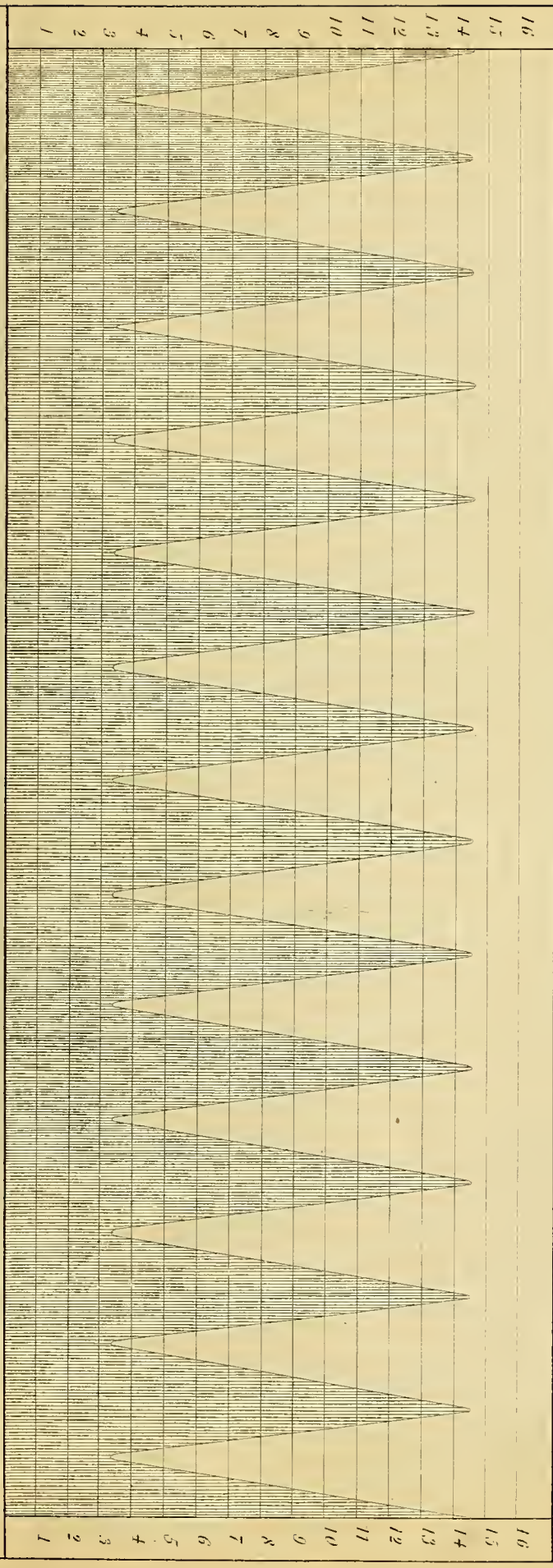
This wheel, which makes the blast in the Sturtevant Pressure Blower is made almost wholly of cast steel, which combines the minimum of weight with the maximum of strength and durability. The improvements patented in this wheel are such as to enable it to produce blast with less power than any other wheel. Every thing being right **it will utilize 85 per cent of the power applied to it, only wasting 15 per cent in friction.** Nothing comes in contact with this wheel; it simply revolves in the wheel-case without touching anything, and will not wear out by use.

No. 7 Diagram showing how much more wind the Sturtevant Blower makes than the Root Blower.



B. F. STURTEVANT,
 Patentee and Sole Manufacturer of the
STURTEVANT PRESSURE BLOWER
 AND
EXHAUST FAN,
BOSTON, MASS.

Diagram showing the puffing or pulsation of the so-called Patent Rotary Force Blast Blowers while furnishing blast for tinplate furnaces. The Sturtevant Pressure Blower does not puff, but forces the wind steadily.

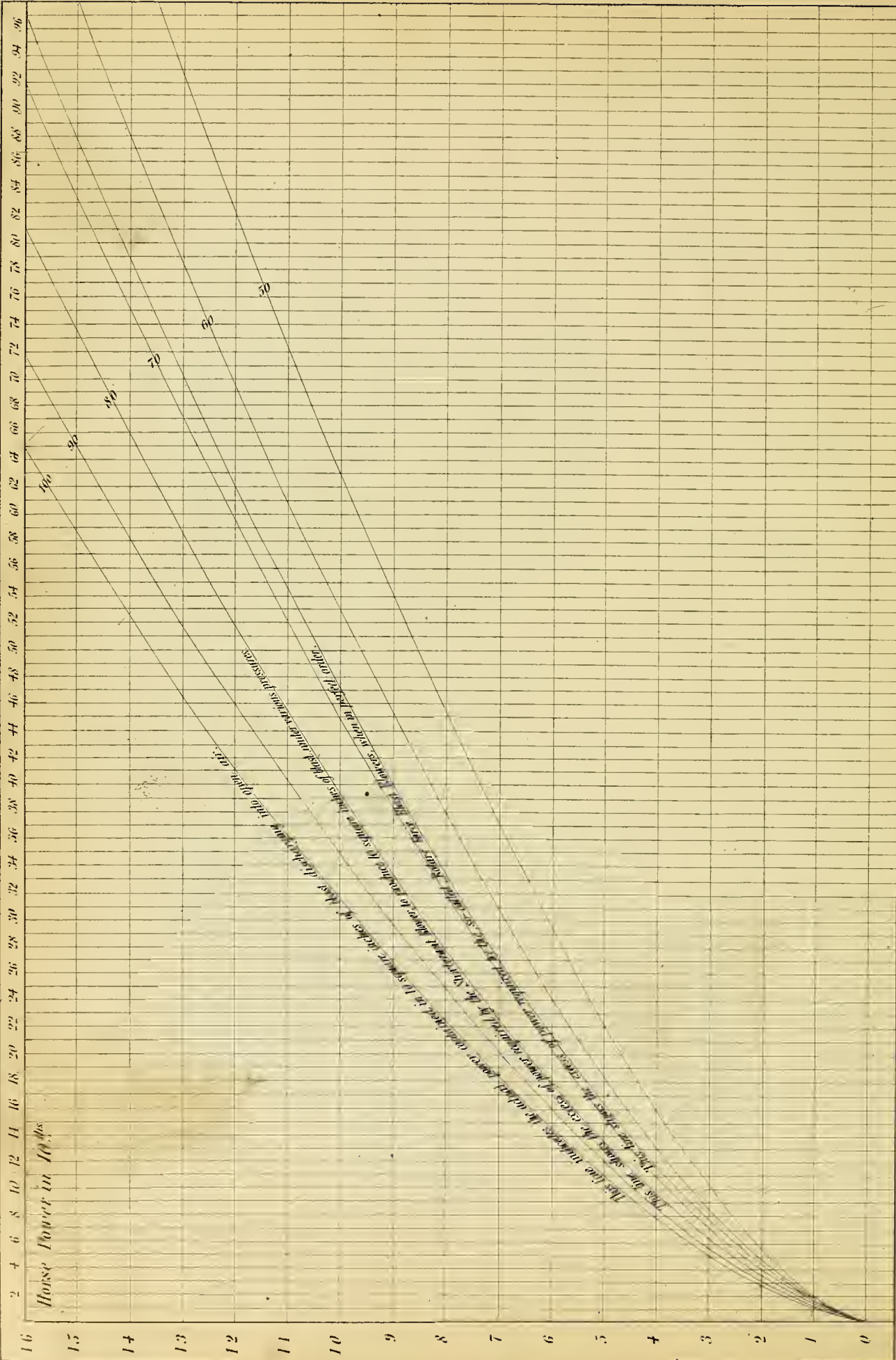


This diagram represents 2 1/2 seconds of time of Mr. Kezies' running at 100 revolutions per minute and Roots at 150.

Entered according to Act of Congress in the year 1870 by B. F. Sturtevant, in the office of the Librarian of Congress, at Washington.

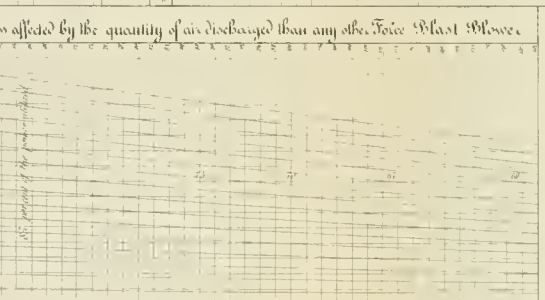
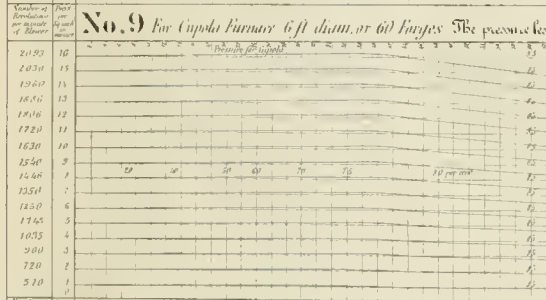
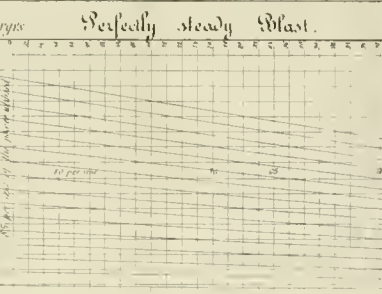
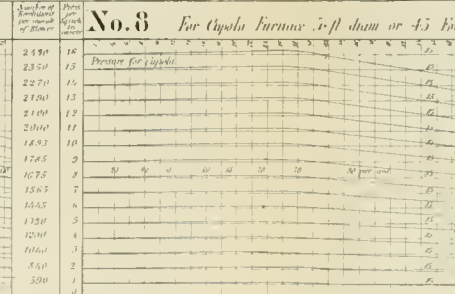
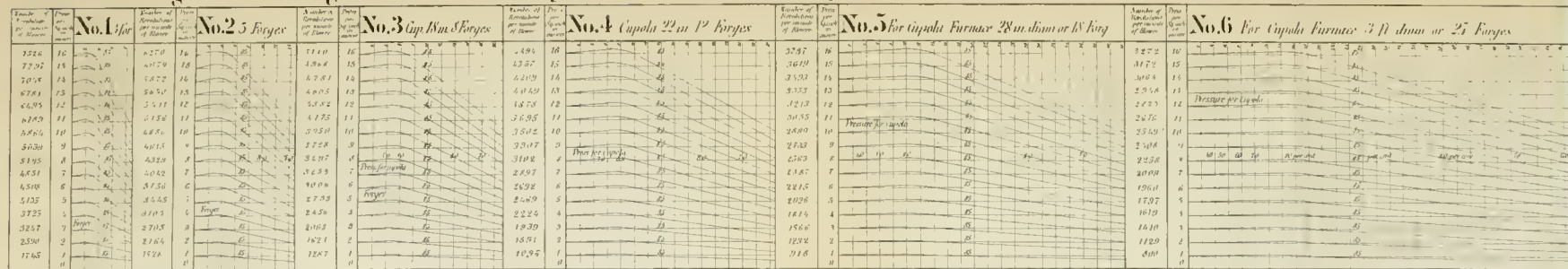
J. Moore & Co. 11th St. Boston.

DIAGRAM SHOWING THE EXCESS OF POWER REQUIRED FOR 10 SQ. IN. OF BLAST.



This engraving is designed to illustrate the fact, that the Sturtevant Pressure Blower will produce any given amount of blast, under pressures varying from 1 to 6 ounces, with less power than that required by the so-called Rotary Force Blast Blowers. The curved lines are made from actual tests, taken by Mr. B. F. Sturtevant personally, at considerable expense of money and time, in fitting up Machinery for the purpose.

Diagram showing the Pressure, Speed and Capacity of B. F. Sturtevant's Pressure Blower.

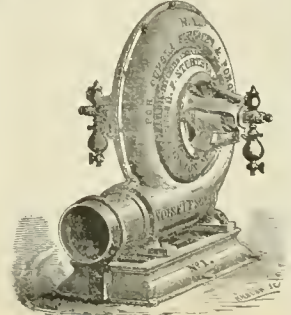


This Chart

Gives the speed of each size Blower from Nos. 1 to 10, for each ounce of blast from 1 oz. to 16 oz., making 160 different speeds. Used in connection with "Diagram showing excess of power required" it will give the power requisite to run any size Blower at any one of the ten speeds given. It shows the exact difference in size and capacity between different numbers of Blowers. It shows at what point in its capacity each Blower will "yield" or give the best percentage of blast; **85 per cent. being the best yet obtained.**

The chief advantage which the *Sturtevant Blower* possesses over all others, is the high rate of speed at which it is capable of running, and the great quantity of air which it can discharge. There are no valves or slides, nor cam motions or gears in this Blower, to impede its velocity, consume power, create noise, and wear out fast.

There are no Iron Foundries or Forge Establishments in this country which require a stronger blast under any circumstances than this Blower gives. There is no Blower made in the United States which will force the wind into a cupola furnace in such large quantities as the *Sturtevant Blower*. All other force blast Blowers are limited in the quantity of air which they discharge, for the reason that the air can only pass through them as fast as the Blower revolves, whereas in the *Sturtevant Blower* there is no impediment to the free passage of the air through the Blower. There exists nowhere in the *Sturtevant Blower* any of the objections to high speed which are usually met with in other machinery. The Patentee and Manufacturer of this Blower will guarantee the Blower in all cases to give entire satisfaction.

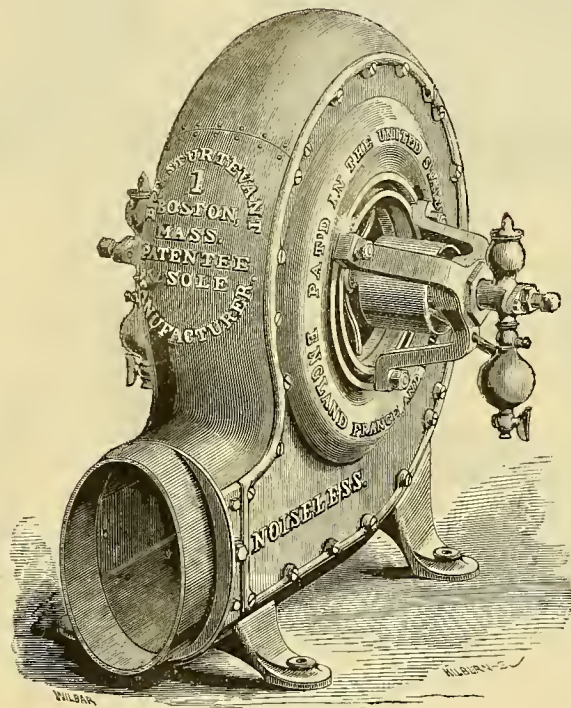


Pressure Blower for Cupola Furnaces and Forges.

B. F. Sturtevant, Patentee and Sole Manufacturer, No. 72 Sudbury Street, Boston, Mass.

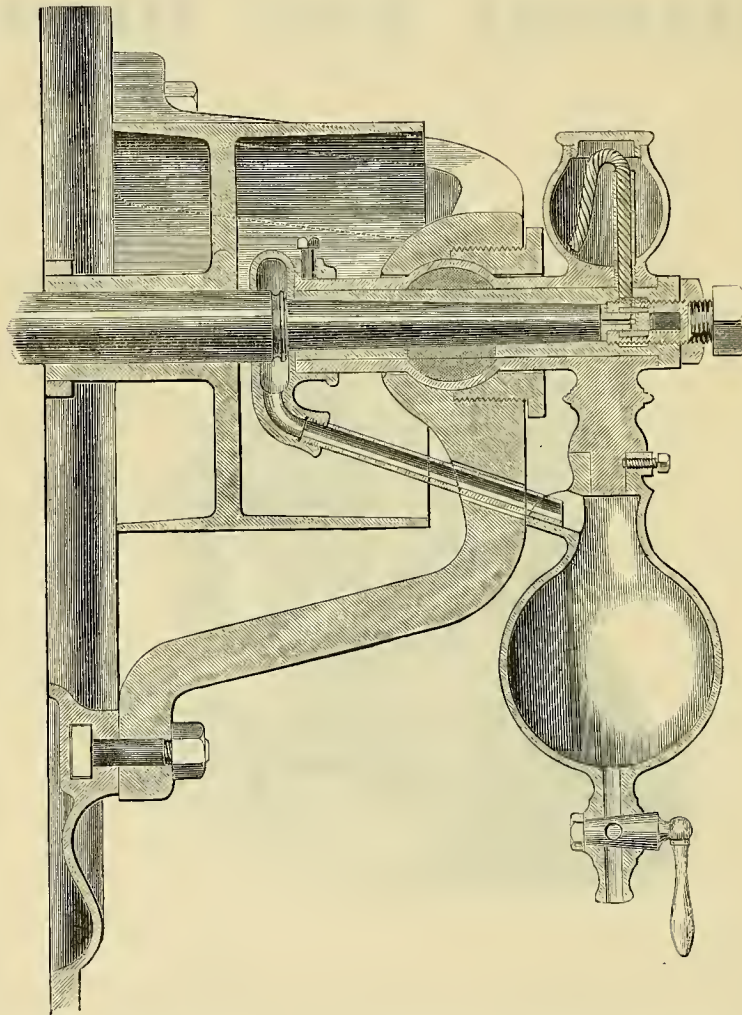
The Horizontal Lines represent the Pressure in Inches. The Perpendicular Lines show the Volume in Square Inches of open mouth. Read here where the Pressure is reduced by increasing the volume of what quantity of Air is discharged at a given time.

Sturtevant Fan Blower.



This cut represents the STURTEVANT IMPROVED FAN BLOWER, which is particularly adapted for Steam Boilers, Furnaces for puddling iron and melting steel, and Heating Furnaces for the manufacture of iron and steel Rails, merchant Iron and Steel, Axes and edge Tools, agricultural Implements, and other descriptions of Hardware; also, for large Furnaces and Forges used in connection with steam Hammers. Strength of blast usually about one-fourth pound per square inch.

Hanger, Pulley and Self-Oiling Journal.



This enlarged Section Cut shows the Hanger, Pulley and Self-Oiling Journal Bearing of my improved Fan and Pressure Blower. It will be seen that the Ball Joint is chambered, so as to receive and contain a mass of sponge or other porous material, for the purpose of absorbing a large quantity of oil, holding it in readiness and supplying it as may be wanted, to the Bearing, through three passages through the Bushing, which are also stuffed with the same material. The Bushings may be removed when worn, and new ones (which are sent with every Blower) substituted.



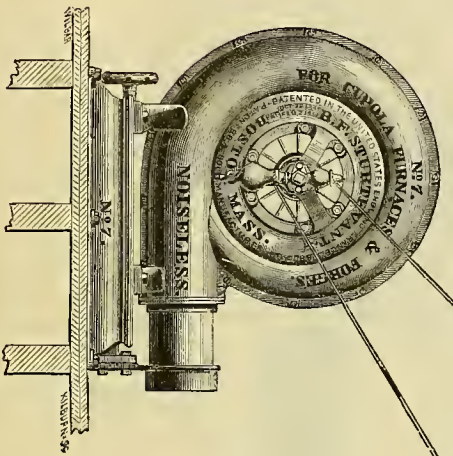
Speeding the Blower.

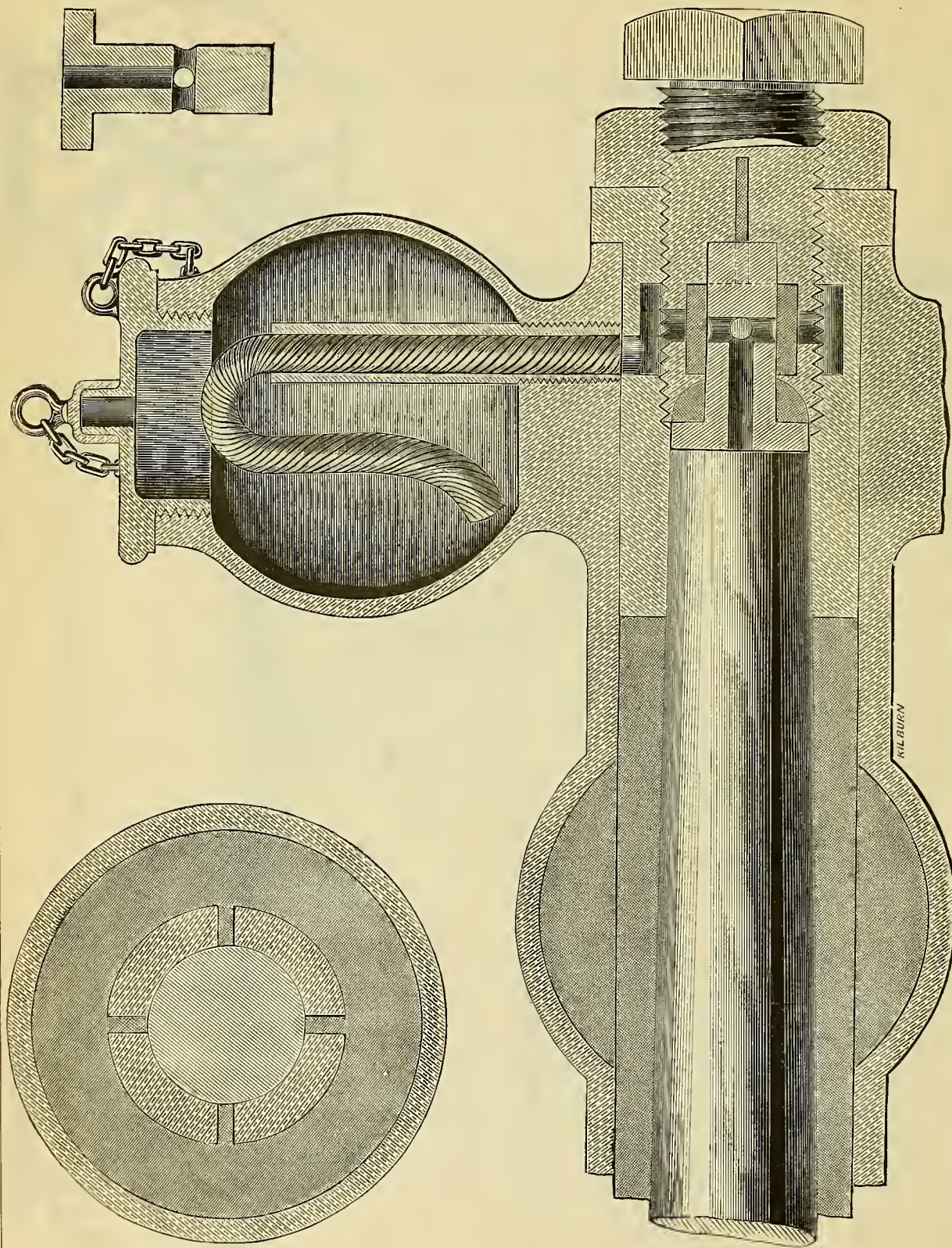
The great force of blast necessary for fast melting in Cupola Furnaces, requires the blast wheel to revolve at a high rate of speed.

To insure this, two conditions are requisite. *First*, that the Blower shall be constructed for fast speed, so as to avoid waste of power.

Secondly, the pulleys and belting employed for driving the Blower should be so well proportioned and perfectly set up that the desired speed shall be obtained without slipping of belts and waste of power by undue friction.

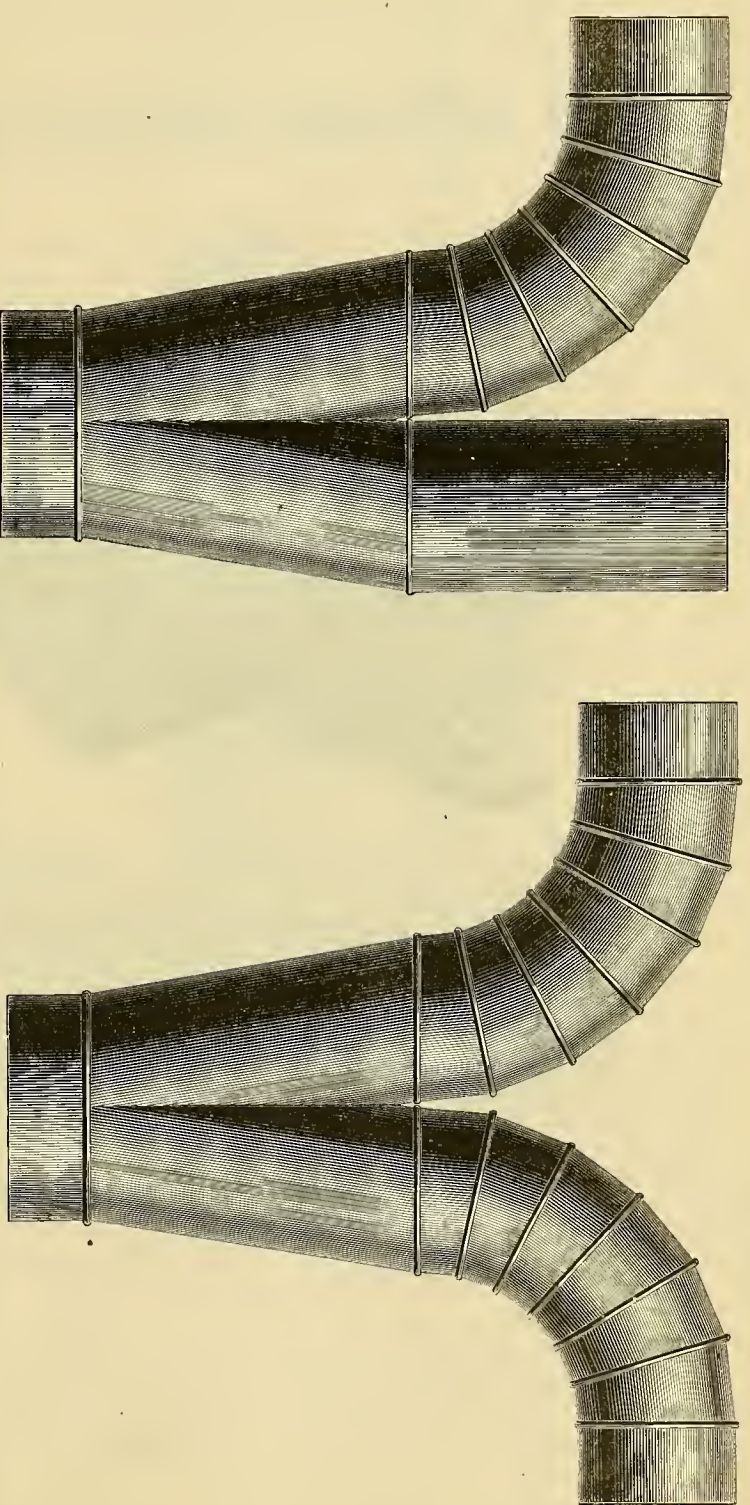
If the belts slip, the complaint of the meler will be that he "doesn't get wind enough." By the slipping of the belts, and the running of the same against the frame-work of the Blower, and the absorption of power by a badly constructed counter-shaft and pulleys, it will be said that the Blower consumes more power than the inventor claims for it. Great care should be exercised in setting up the Blower to have these conditions right.





This cut shows a portion of the Journal Bearing of Pressure Blowers and Exhaust Fans. This Bearing is held in place by two Cap Screws (see prospective cuts,) at the end, by means of which it can be easily removed and a spare one put in its place, should the Blower, after being many years in use, need new bearings or meet with accident. One pair of these Boxes or Bearings accompany each Blower or Exhaust Fan.

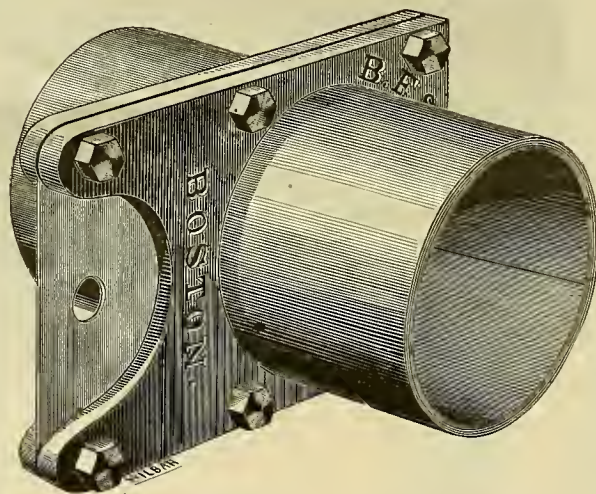
Branches and Elbows of Air Blast Pipes.



Right angles or square corners should never be used in pipes for conducting air, as they tend to largely diminish their capacity. When it is necessary to make turns in the pipe, easy curves should be introduced, as shown in the above cuts. When the blast or volume of air is to be divided, the branches should be constructed substantially as shown that it may flow with equal freedom into and through the several branches. The passage of air through pipes is always attended with much friction, and when the final discharge of air is a long distance from the blower the area of the pipe should be in proportion to its length and the area of discharge or tuyers, in all cases except where the pipe is used for carrying off shavings, saw-dust, etc., having the mouth of pipe wide open; in which case the current of air must necessarily be rapid enough to prevent heavy substances from lodging and filling up the pipe.

These remarks apply to Suction Pipes as well as Blast Pipes.

Blast Gate,

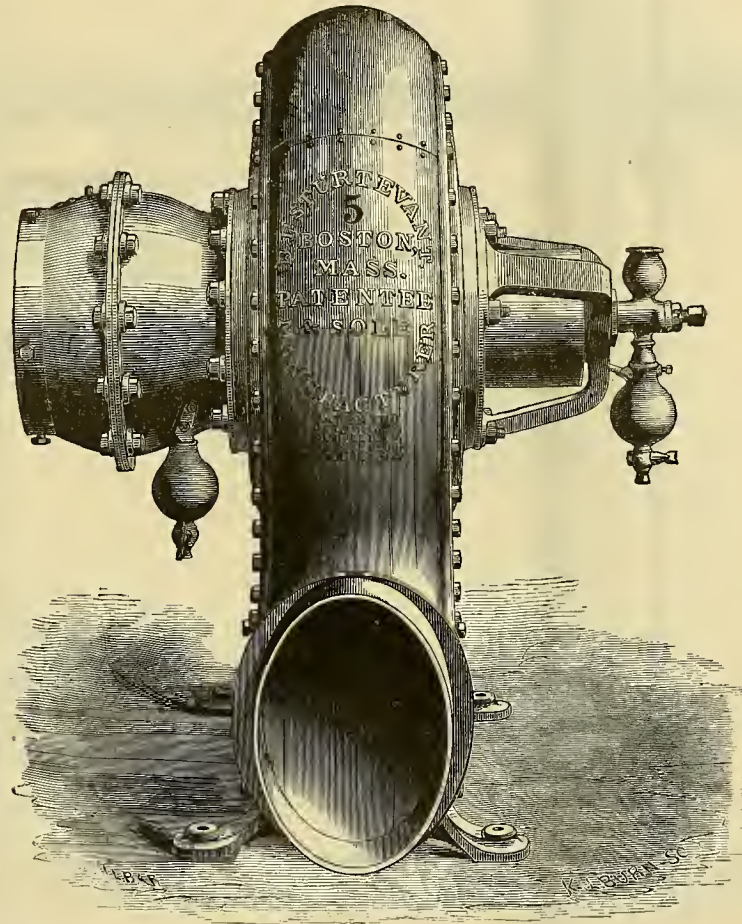


For opening and closing pipes which supply blast to Furnaces, Forges, &c.

PRICE LIST.

2 inch	\$1 00	10 "	\$8 00
3 "	1 65	12 "	10 25
4 "	2 40	15 "	15 00
5 "	3 25	16 "	16 00
6 "	4 25	20 "	18 00
8 "	6 00	24 "	25 00

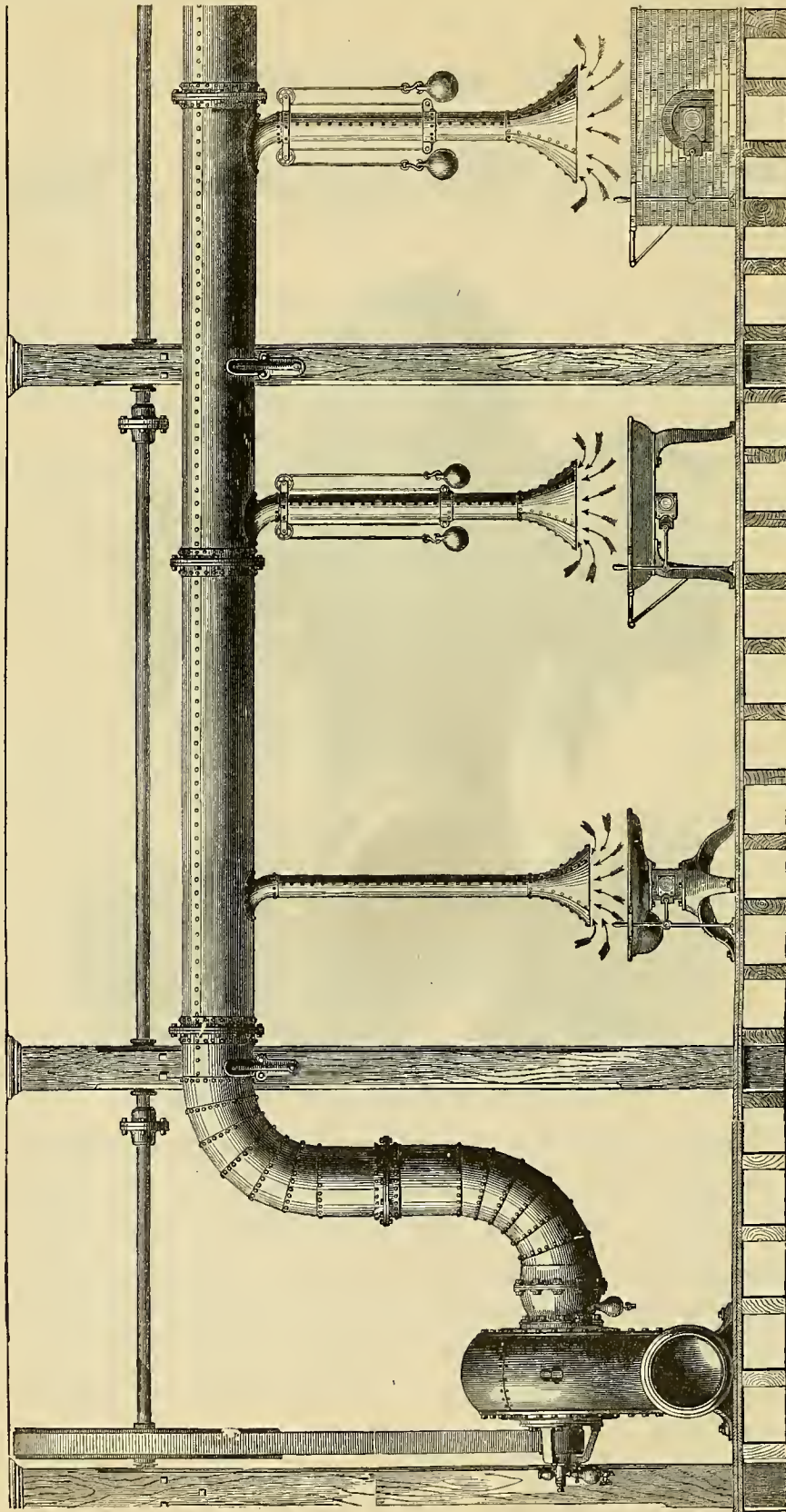
B. F. Sturtevant's
Patent Exhaust Fan.



FOR removing shavings from Planing and Moulding Machines, saw-dust, and dust from Sand Wheels such as are used for polishing lasts, carriage spokes, shoe bottoms, felt hats, &c., and Emery Wheels for polishing all kinds of hardware. Smoke and gas from smoky Smith Shops and Manufacturing Establishments and Chemical Works. Steam and vapor arising from Paper Machines, and all drying cylinders and dry-rooms, also sweat from Mill-Stones, offensive odors from Try Kettles and Dyeing Establishments. Dust from Rag and Cotton Pickers, Flax and Rope Machinery. Ventilation of Coal Mines and all Underground Apartments or Cellars.

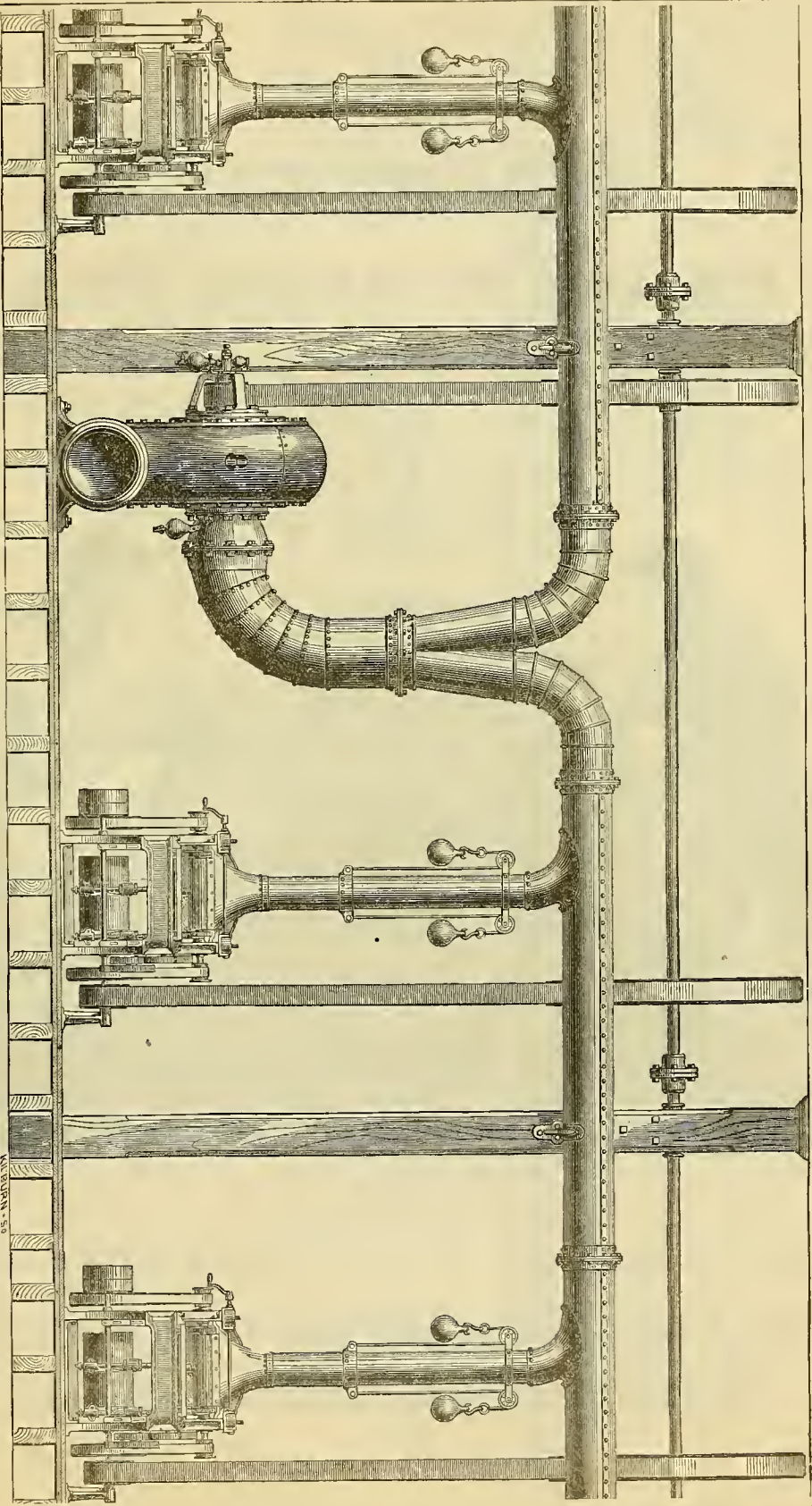
B. F. Sturtevant's Patent Exhaust Fan

Adapted for removing Smoke and Gas from smoky Smiths' Shops and Manufacturing Establishments, Dirt from Cotton, Woolen and Rag Machinery, offensive odors from Try Kettles, &c., &c.



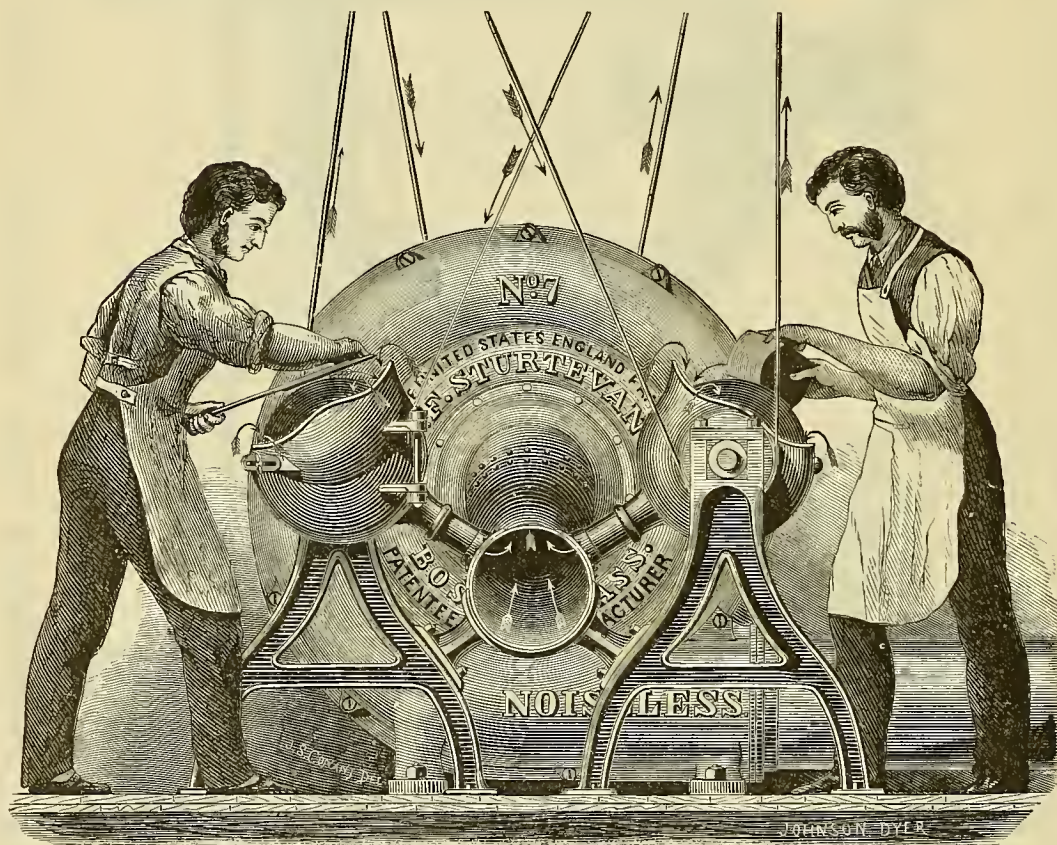
It will be seen in this engraving that the Fan is connected at one end of the Suction Pipe instead of the middle. This is a good arrangement when the pipe is not too long. When the smoke and gas taken into the Suction Pipe is of a temperature above 300°, it will be necessary to use an Exhaust Fan especially adapted for hot blast, varying materially in its construction from the one shown in the above engraving.

**B. F. Sturtevant's Patent
Exhaust Fan applied to Planing Machines.**



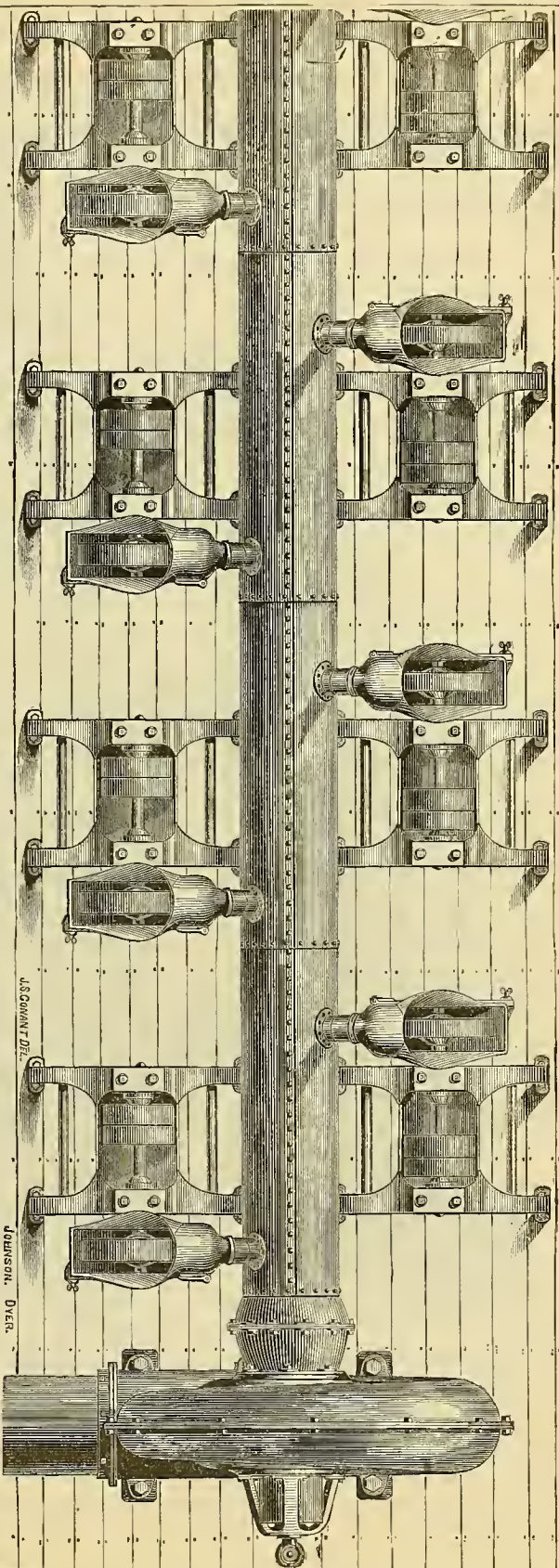
The Fan may be placed on the floor as shown, or if of the smaller sizes up overhead, and at one end of the pipe. The pipes may be made round or square, in part or wholly of wood, instead of galvanized iron, as shown, and may be laid along or under the floor if desired. The branch pipes should enter the main, as shown, with an easy turn towards the Blower. Their combined area should in no case be greater than the area of the main pipe. The hoods should fit down as closely as possible around the point where the shavings are made.

B. F. Sturtevant's
Patent Exhaust Fan.



Applied to Sand and Emery Wheels and Dry Grind-
stones, for grinding and polishing all kinds of Wooden
and Hardware and Agricultural Implements.

Exhaust Fan applied to Emery Wheels.



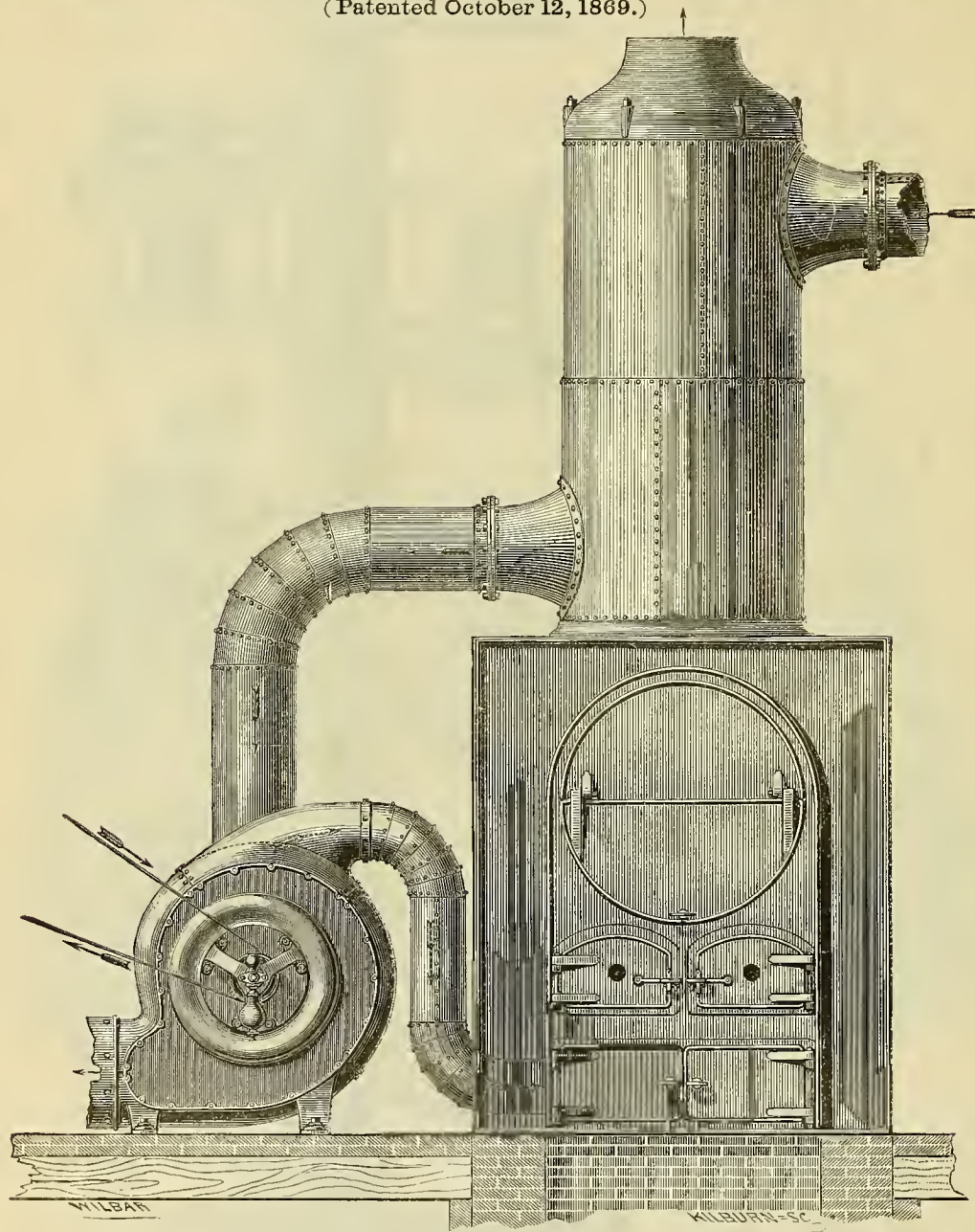
Various modifications of this plan of arranging the Fan and pipes in connection with the wheels can be made, but in no case should the combined area of the branch pipes exceed the area of the suction and discharge pipes.

The Fan may be placed on the floor as shown, or if small it can be placed over head on a suitable scaffolding, or holed directly to the ceiling. The discharge pipe may lead out of the building horizontally, or upward, or downward, but should in no case have elbows in it. The air discharged may be used to increase the draft under boiler furnaces, but should never be discharged into the chimney of the boiler.

When it is desirable that this work should be performed with the least possible noise, and at the same time create a very powerful draft, sufficient to draw in a large amount of dirt and other heavy substances, the Pressure Exhaust Fan should be used in preference to the regular Exhaust Fan which is used for removing shavings, etc.

B. F. Sturtevant's Patent Air Blast Heater,

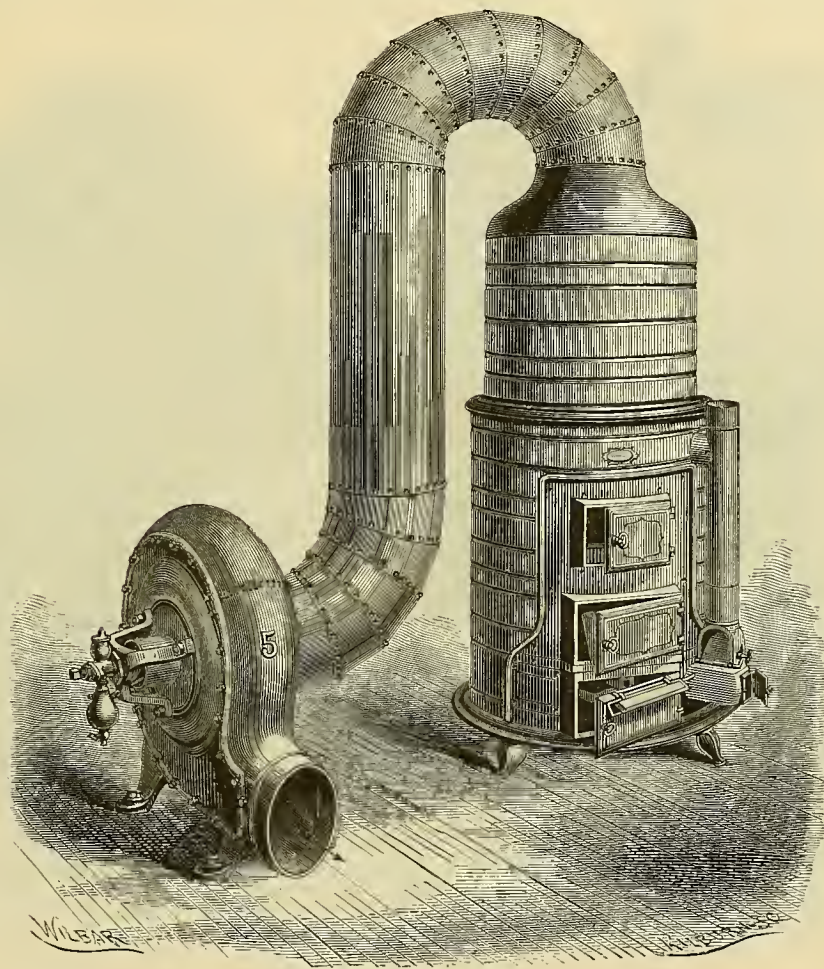
(Patented October 12, 1869.)



This cut represents the front of a Steam Boiler with an AIR BLAST HEATER mounted on the top, in position to receive the hot gases escaping into the chimney through a series of tubes for heating a current of air which is drawn through among the tubes by the Blower. A portion of the hot blast can be used for blowing the fire under the boiler, which is much better than cold air; while a very large surplus may be carried off for use in dry-houses and for heating large rooms in Manufacturing Establishments.

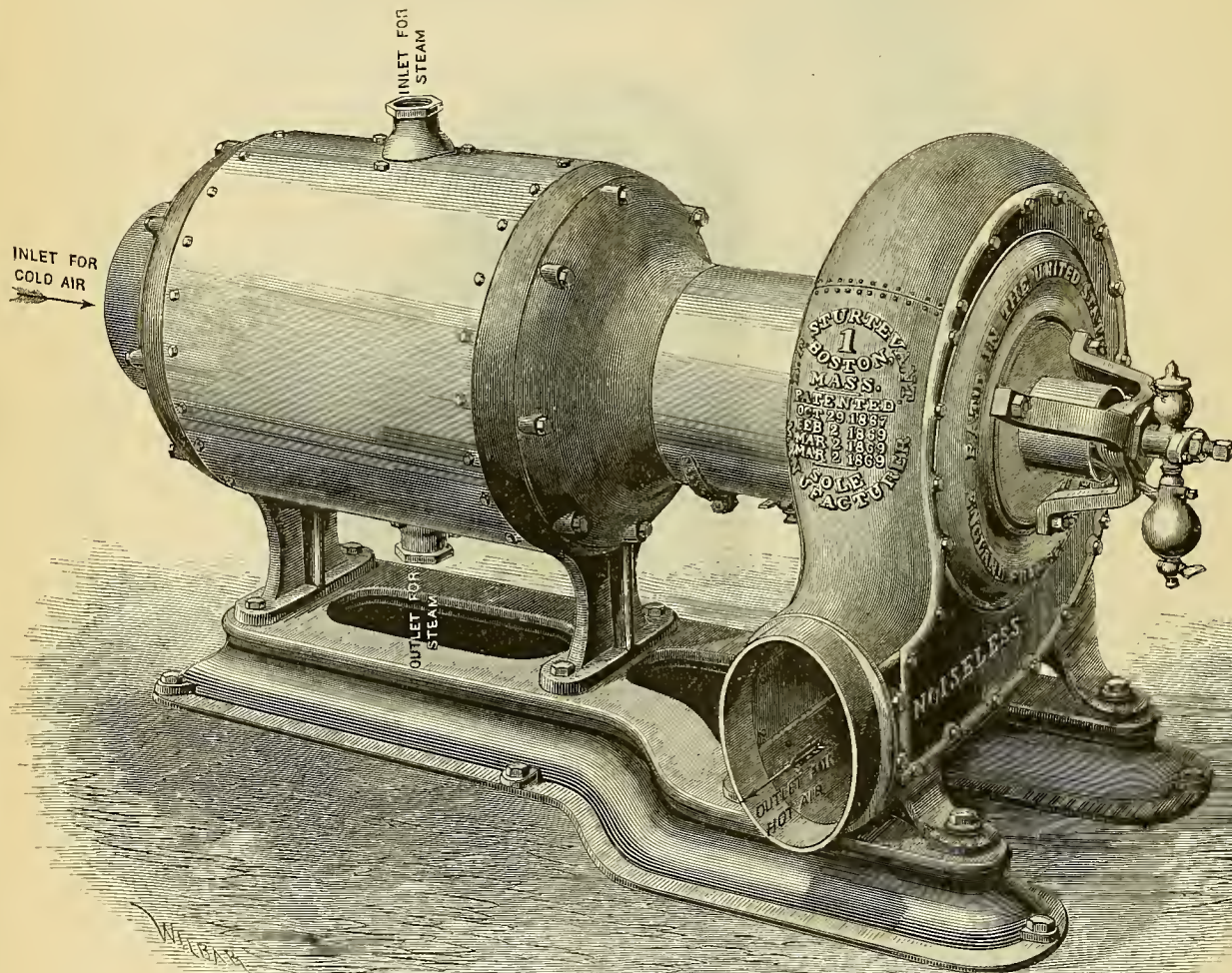
B. F. STURTEVANT'S
Patent Hot Blast Apparatus,

COMPOSED OF HOT AIR FURNACE AND BLOWER.



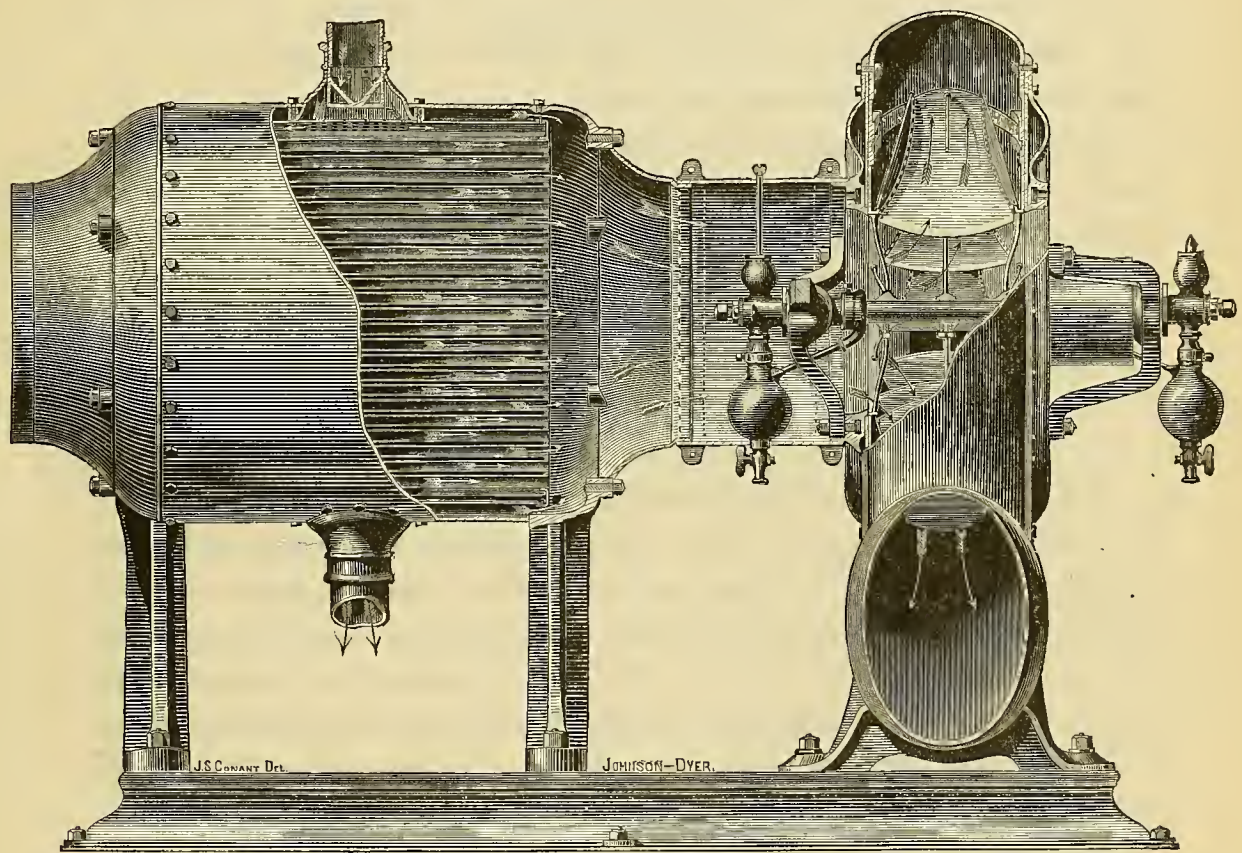
This apparatus may be used where there is water power for running the Blower, but no steam for heating; for drying all kinds of material and manufactures requiring it, such as cotton, wool, yarn, hosiery, leather, paper, leather board, tobacco, glue and chemicals. It is a first class apparatus for drying purposes, and is produced at low cost and is economical to run.

Exhaust-Steam Dryer.



For drying Lumber, Brick, Wool, Cotton and Hosiery,
Corn and other Grains; also, Leather,
Glue, Tobacco, &c.

B. F. Sturtevant's
Patent Hot Blast Apparatus.



Sectional View.

Adapted for Direct or Exhaust Steam

For Dry Houses, &c.

Exhaust-Steam Dryer.

THIS Dryer, composed of a Heater and Blower combined, requires no direct steam from the boiler; the exhaust pipe, being connected with the Heater, conducts the steam in among the air tubes, heating the air instantaneously to the temperature of 150° to 200° and makes no back pressure on the engine. The temperature can be regulated by the introduction of more or less steam into the Heater.

The Heater is constructed entirely of copper and brass, and is the most durable machine that has ever been offered to the public. The Blower used is my latest and most approved pattern. The hot blast can be carried several hundred feet, through pipes. Any change can be made in the blast-pipes without disturbing the Heater. Dryers of all sizes, capable of condensing the exhaust steam of an engine from one to one hundred horse-power.

Science of Drying.

The science of drying is in itself exceedingly simple, but to those who are entirely unacquainted with it, it appears mysterious, for the reason that the medium for carrying off the water being air, is not visible. Water and other substances which can be seen are much more readily understood. All the science there is about drying, is, that the air absorbs the moisture as a sponge absorbs water. In winter, when the out-door air is dry, as it usually is, (the frost condensing the moisture in the air,) it will, if heated up to say 150° take in or absorb moisture much more rapidly than in summer, when the out-door air has from 50 to 80 per cent. of its capacity for absorbing moisture already loaded; precisely the same as a sponge, when dry, absorbs water in larger quantities and more rapidly than when it is wet. Heated air will absorb moisture in proportion to the increase of temperature; its capacity for carrying large quantities of water being increased by the heat. A cubic foot of air at 32° will carry off only two grains of water, while at 160° it will carry off sixty grains,—hence the necessity of heating the air. Heated air for dry houses should have no moisture added to it other than that which it gathers from the substance being dried. No steam or vapor should be permitted to mingle with the air before it comes in contact with the contents

of the dry house. The air should be as dry as possible, and made to move rapidly, so as to wipe off the moisture from the surface of the lumber or other fibrous material as soon as it reaches the surface, as it works its way out from the centre of the body being dried.

All moist, green or wet substances requiring to be dried, should be treated in precisely the same manner, whether it be lumber, brick, wool, cotton, corn or other grain; the process for drying all these is exactly the same, viz: the rapid circulation of heated air, and the machinery necessary to accomplish this is nothing more nor less than a heater for heating the air and a blower for circulating it.

Re-Heating.

When the last stages of drying lumber is the object, I return the air through a return pipe into the Heater and re-heat it, for the purpose of avoiding unnecessary ventilation or escape of heated air, giving the air plenty of time to impart its heat to the lumber and absorb what little moisture there is, before passing out of the dry-house.

It may be supposed that the air, after having once passed through a pile of green lumber, or bed of wool or cotton which is wet, will have become thoroughly saturated with moisture, rendering it incapable for further use in drying. It has, however, been found by actual experiment that heated air will pass through the material to be dried from fifty to one hundred times before becoming thoroughly moistened:— a dry sponge used for wiping off perspiration is a good illustration of the manner in which the air wipes off and absorbs the moisture from the substance being dried.

It may be thought by some that my process of heating will heat the air too hot, but this is not possible, except in cases where glue or chemicals are to be dried which will melt at a comparatively low temperature. Air heated by a furnace is liable to be heated up to 500°, and direct steam pipes, when the steam is circulating rapidly under high pressure, will heat from 250° to 300° when the air is confined; but my apparatus is not liable under any circumstances to heat the air over 200°. This temperature will not injure or discolor anything, either grain, lumber or other fibrous substances.

I have heard of several instances where blowers have been connected with dry-houses for drying lumber, grain, &c., which did not work satisfactorily, and after investigating the subject thoroughly, I have invariably found that the difficulty was a superabundance of ventilation, or, in other words, the air was driven with such rapidity that it did not have time to heat, neither did it have time to give off its heat, nor did the air have sufficient time to become saturated with moisture.

Objections.

As a lumber dryer, parties not having tried it have raised the following objections :— First—that it lays still and inoperative fourteen hours out of twenty-four. Second—that too much circulation of the air cracks the lumber. Third—that it will not furnish sufficient heat to the dry-house.

These objections are somewhat contradictory. Nothing but rapid drying will cause lumber to check; the outside of the lumber shrinking much faster than the inside is what produces the checking or warping of the lumber. There is no greater proof of the superiority of a dryer, than that it dries the lumber so fast that it cracks.

No green lumber will stand a temperature of 200° when there is a proper circulation of dry air. When the temperature is up to 200° it is necessary to have the lumber surrounded with dead, moist air, to keep it from cracking. A dry-house heated up to 125° good circulation for ten hours, will, when the engine stops, be full of dry hot air; the lumber will then have time to even its drying, the outer surface drawing the moisture from the centre.

Another objection raised, is, that the kind of heat is not the best. Now there are no two kinds of heat. Some people speak of moist heat, that occurs where the heated air has been moistened by the addition of vapor. The only difference between moist and dry heat is in the moisture of the air, and not of the heat. Heat is nothing but heat. The air may be moist or dry before it is heated, or may be moistened afterwards. Air cannot be dried except by being brought in contact with something very cold, when its moisture will be condensed and settle in the form of dew. There is no process known by which moisture can be extracted from the air while it is hot. Heated air will take in more and more moisture until it becomes thoroughly saturated.

When exhaust-steam is used for heating feed water, it is only when the pump is worked that any of the steam is condensed by the cold water, and even then but a small part. Steam, after passing through the feed-water heater, can be conducted into the air heater and produce the very best results.

This apparatus, which I now offer to the public, accomplishes the work of drying in a far more economical and expeditious manner than anything heretofore in use with which I am acquainted.

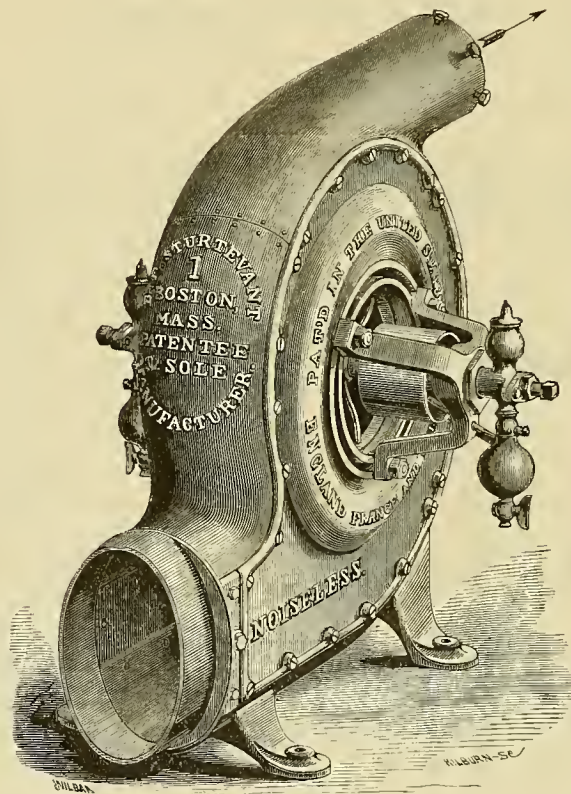
Heaters for public buildings and factories constructed on the same principle.

Hot Blast Apparatus.

PRICE LIST, &c.

<i>Number.</i>	<i>Diameter of Exhaust Pipe in Inches.</i>	<i>Diameter of Blast Pipe.</i>	<i>Diameter of Pulley on Blower.</i>	<i>Revolutions of Blast Wheel for Fair Blast.</i>	<i>Cubic Feet of Air Discharged Per Minute.</i>	<i>Price.</i>
2	1½	6	3	2800	1400	\$150 00
3	1½	7½	4	2400	1740	200 00
4	2¼	9	6½	1900	2080	300 00
5	2½	10½	7½	1600	3000	400 00
6	3½	13½	8¾	1300	4800	500 00
7	4	15	10	1100	6880	650 00
8	4	18½	11	1000	9100	800 00
9	5	20	12	800	12180	1000 00
10	6	23½	14	700	17400	1200 00
11	7	25½	16	600	26000	1500 00
12	8	28	18	500	37700	1800 00

Double Mouth Fan Blower.

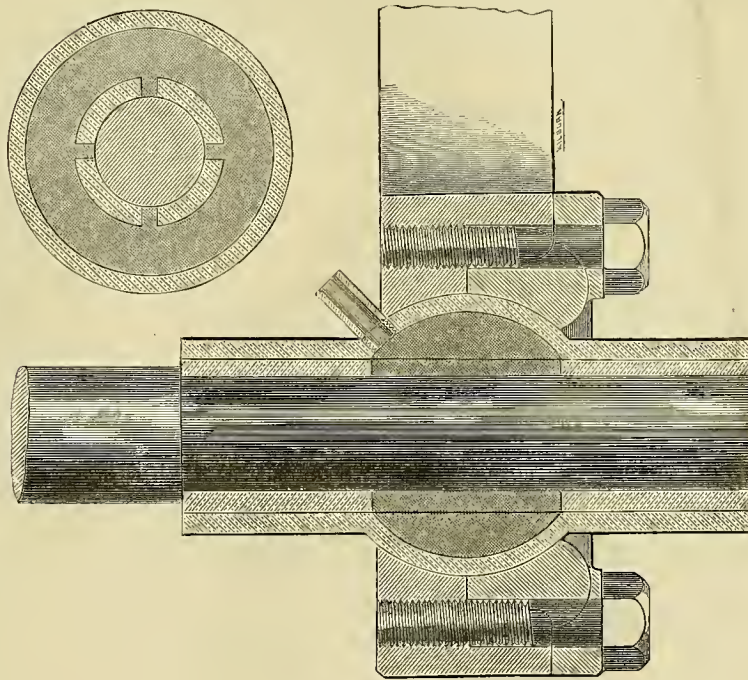


This cut represents a Fan Blower with two mouths or outlets, one larger than the other, and is well adapted for use in establishments where steam boilers and forges are to be furnished with blast from the same blower, the large outlet supplying the boiler and the small one the forges.

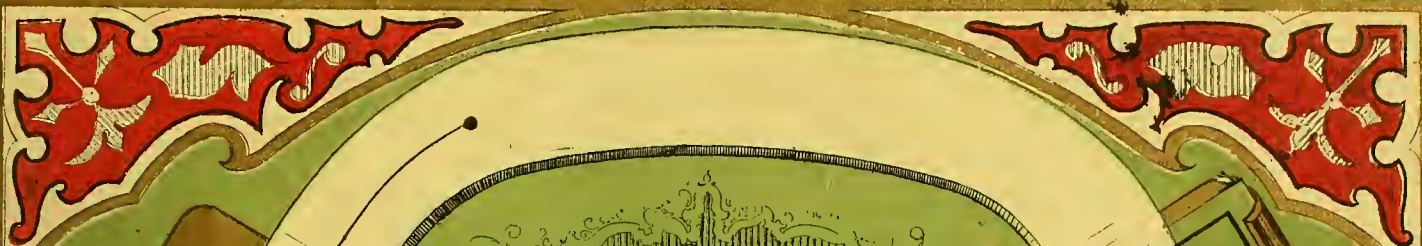
SECTION OF

Journal Bearing

For Counter Shaft.

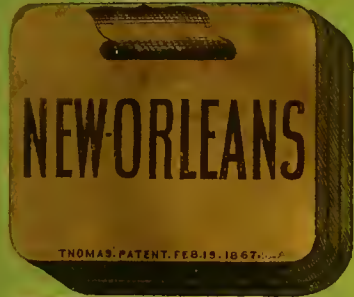


The above cut shows the Self-Oiling Box, and Universal Joint by which it is attached to the Hanger. It will be seen that the Ball Joint is chambered, so as to receive and contain a mass of sponge or other porous material, for the purpose of absorbing a large quantity of oil, holding it in readiness and supplying it as may be wanted to the Bearing, through three passages through the Bushing, which are also stuffed with the same material.



THOMAS PATENT

SAFETY BAGGAGE CHECK



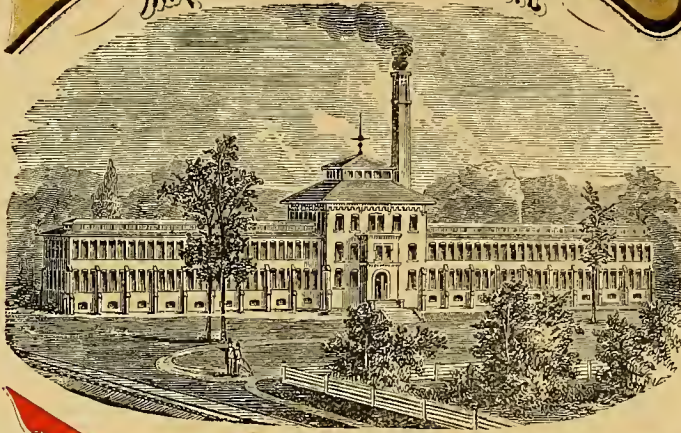
G. F. THOMAS
90.92 & 94
GRAND ST.
NEW YORK.

Entered according to act of Congress in the year 1870, by G.F. Thomas in the Clerk's Office of the District Court of the U.S. for the Southern District of New York



ELGIN WATCHES

MANUFACTURED BY THE



CALENDAR 1871

JANUARY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	.	.	.	.

FEBRUARY

S	M	T	W	T	F	S
.	.	.	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	.	.	.	.

MARCH

S	M	T	W	T	F	S
.	.	.	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	.

APRIL

S	M	T	W	T	F	S
.	.	.	.	.	.	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	.	.	.	.	.	.

MAY

S	M	T	W	T	F	S
.	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	.	.	.

JUNE

S	M	T	W	T	F	S
.	.	.	.	.	.	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	.	.	.	.	.	.

CALENDAR 1871

JULY

S	M	T	W	T	F	S
.	.	.	.	.	.	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	.	.	.	.	.

AUGUST

S	M	T	W	T	F	S
.	.	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	.	.

SEPTEMBER

S	M	T	W	T	F	S
.	.	.	.	.	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

OCTOBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	.	.	.	.

NOVEMBER

S	M	T	W	T	F	S
.	.	.	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	.	.

DECEMBER

S	M	T	W	T	F	S
.	.	.	.	.	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	.	.	.	.	.	.

The attention of Watch buyers is called to the fact that the Elgin Watches now offered have, with other improvements, a new

PATENT DUST EXCLUDER,

so constructed as to enclose the works, and form a protection against dust, enabling the movement to remain in order without cleaning double the time that a Watch will ordinarily run without this protection.

The Company feel confident, after having had their Watches three years in market, and selling many thousands of them in all parts of the country, that the *Elgin Watches* are the best time-keepers, for Ladies' or Gentlemen's use, now offered to the American public.

OVER FIVE HUNDRED DEALERS,

in various parts of the land, have unreservedly endorsed them. They are in use upon numerous lines of Railway, including the *Union Pacific* and the *Pennsylvania Central*, and officers of these roads, with other prominent R. R. officials, endorse them as the best Watches for the use of R. R. employes and travelers yet introduced. Specimens of these testimonials are presented:

NEW YORK CENTRAL RAILROAD, GENERAL SUPERINTENDENT'S OFFICE, ALBANY, March 26, 1870.

T. M. AVERY, Esq., Pres't National Watch Co., Chicago.

DEAR SIR: In answer to your inquiries as to the Watch I have of your manufacture, I would say that I have carried it some four months, and find it a good, reliable time-keeper. The movements seem perfect; it runs regular, and I see no difference in its register of time whether I carry it about me in the office or when traveling by trains. I do not hesitate to recommend them as reliable Watches, with perfect works, running with great accuracy, and well adapted for use of railroad men or others that wish good watches—besides, they are the production of our own country's mechanics, and that, together with their merit as time registers, should certainly give them preference over imported Watches, however good the reputation of foreign makers may be.

Yours truly, J. TILLINGHAST.

PENNA R. R. Co., GEN'L SUP'T OFFICE, ALTOONA, Jan. 19, 1870.

T. M. AVERY, Esq., Pres't National Watch Co., Chicago.

DEAR SIR: This Company has purchased and put in the hands of its engine-men, eighty "Raymond movements," which have given excellent satisfaction and proved to be very reliable time-keepers. In addition to these, quite a number of Elgin Watches have been purchased by officers and employes of this Company, all of whom have been well pleased with the efficiency and regularity of the movements manufactured by the National Watch Company.

Respectfully, EDWARD H. WILLIAMS, General Supt.

Various grades and prices made to suit different tastes. No movements retailed by the Company. Call on your Jeweler and ask to see the Elgin Watches. Business Offices and Salesrooms National Watch Company,

No. 1 Maiden Lane, New York, and
127 & 129 LAKE ST. CHICAGO.

Awarded Prize Medals at World's Fair, London; World's Fair, New York; Exposition Universelle, Paris.

HERRING'S

New Patent Champion Banker's Safe.

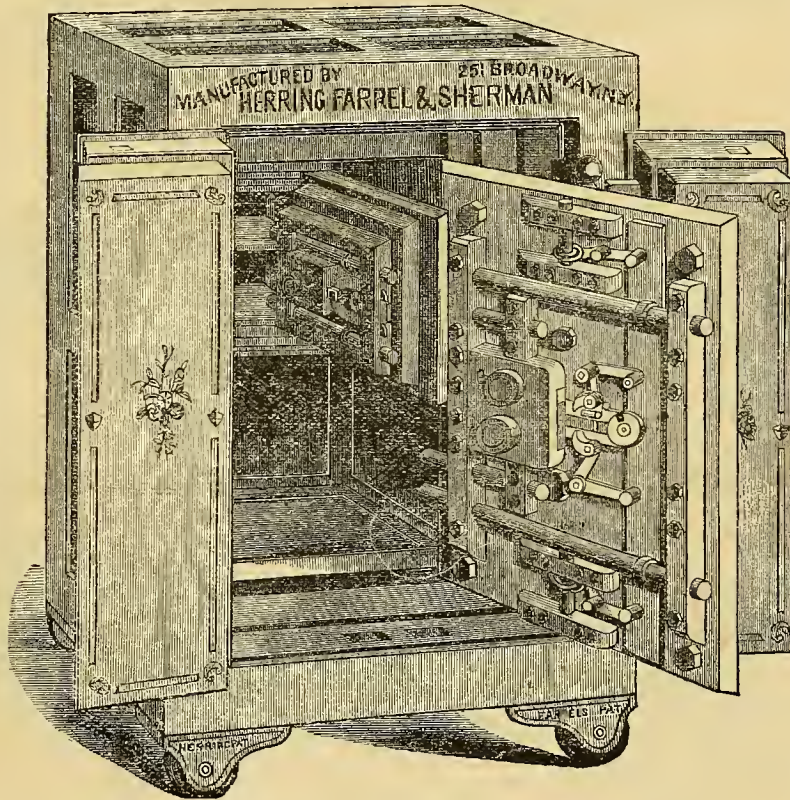
FIRE-PROOF! DRILL-PROOF!! WEDGE-PROOF!!! BURGLAR-PROOF!!!!

Made of Wrought-Iron and Steel, and the new metal, "SPIEGEL EISEN,"

With Patent Rubber Flange Protection against Nitro-Glycerine.

THE BEST RESISTANT
TO
DRILLS AND CUTTING-TOOLS

Now Manufactured.



MADE WITH
AND ALL OUR
LATEST IMPROVEMENTS.
WEDGE-PROTECTED JOINTS AND LAPS,

Herring, Farrel & Sherman, 251 Broadway, New York.

Factory, Block bounded by Hudson Street and Ninth Avenue, and Thirteenth and Fourteenth Streets.

Farrel, Herring & Co., 807 Chestnut St., Philadelphia.

Factory, Fifteenth and Willow Streets, Philadelphia.

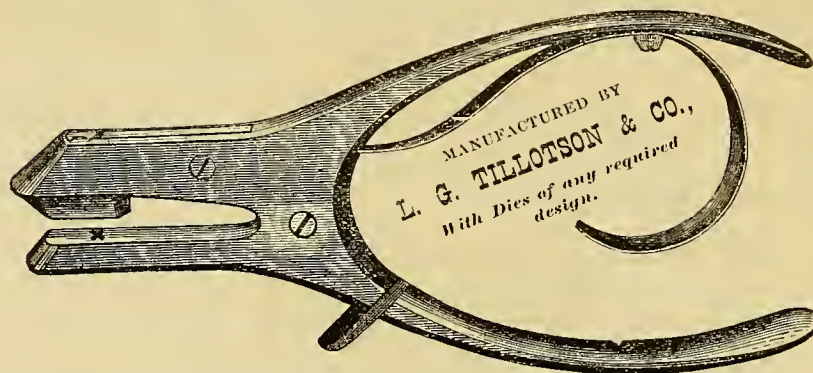
Herring & Co., 40 State Street, Chicago.

Factory, Fourteenth Street, and Indiana Avenue, Chicago.

Herring, Farrel & Sherman, 53 Camp St., New Orleans.

L. G. TILLOTSON & CO.,

No. 8 Dey Street, New York,



CONDUCTOR'S NOVELTY PUNCH. ALL PUNCHES NICKEL-PLATED.

MANUFACTURERS, IMPORTERS, AND DEALERS IN

RAILWAY AND TELEGRAPH MACHINERY AND SUPPLIES

OF EVERY DESCRIPTION.

RAILWAY CAR FINDINGS,

INCLUDING

Upholstering Goods, Rubber Springs, Gilt Mouldings, Seat Springs, Car Ventilators, Locks, Lamps, Lanterns, Head-Lights, Oils, Steam Gauges, Brass, Copper and Iron Flues, Nuts, Washers, Bolts, Wrenches, Files, Locomotive Gongs, Steel Tire, Belting, Hose, Cotton Waste, Steam Packing, Hydraulic Jacks, Conductor's Punches, and every description of Engine and Car Supplies.

ALSO AGENTS FOR THE

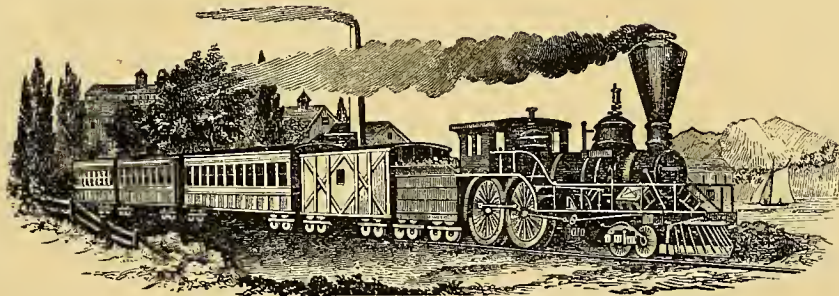
THOMAS PATENT SAFETY BAGGAGE-CHECK.

THOMAS'

PATENT SAFETY



BAGGAGE CHECK.



G. F. THOMAS,

Nos. 90, 92 and 94 GRAND STREET,

NEW YORK.

THE
THOMAS PATENT SAFETY
Baggage Check

Has become well and favorably known during the past three years. It is now used in nearly every section of the country, in every State of the Union. From Maine to Texas and California; from Canada to Florida, every piece of baggage to which it is attached is ensured prompt and accurate delivery. The officers of every railroad upon which it is in use speak of it in the highest and most flattering terms. Its great success, we are pleased to state, is due not only to its superior merits alone, but also to the intelligent, unprejudiced minds of the officers of those roads who have given it a fair and impartial trial. In these days of competition, only that which possesses superior merit within itself can expect or hope to succeed, and if there is any body of men in the world competent to judge of the merits of any invention which may be brought to their attention, it is the practical, intelligent railroad men of the United States, and it is to their judgment, their unbiassed, unprejudiced, reflective, practical minds, the inventor of the "**THOMAS SAFETY BAGGAGE CHECK**" is willing to submit. The universal verdict of approbation awarded to this Check, by the practical railroad men of the country, upon whose roads it is at this time in use, speaks louder in its praise, and more earnestly, than any comments from us. It is pronounced by the officers of every railway upon which it is in use not only a complete success, but a laudable triumph over all other checks and systems of checking baggage. In evidence of which, we presume it is merely necessary for us to direct the attention of the officers of those roads upon which it is not already in use to the host of commendations received from those officers upon whose roads it is and has been in use during the past three years.

To Railway Officers.

EVERY practical railroad man readily perceives the advantages to be gained by substituting a simple and efficient system for the present complicated and imperfect manner of checking baggage. The officers of over sixty of the best-managed roads of the country state that all delay, miscarriage, and loss of baggage is obviated by the use of the "Thomas Patent Safety Baggage-Check," and system of checking baggage. A road adopting it can check to any place whatever that may be reached *via* its route, whether they are able to ticket to the place or not. Hence the passenger is never compelled to have his baggage rechecked, and, consequently, there is never any delay on account of baggage *via* that route, a fact quickly appreciated by the traveler, who would be sure to select that route wherein there was no possibility of his baggage being lost or miscarried. It is universally admitted to be practically impossible to perfect any system with checks now in use except by the Thomas Patent.

As we have time and again stated, and now repeat, and the statement is confirmed by the evidence of the practical officers of over sixty of the best-managed roads of the country, that both for *local and through business* the "Thomas Safety Baggage-Check" has no equal. In fact, it is so perfect and simple that a piece of baggage with this check attached to it *must go to its place of destination*.

An officer of one of our principal roads writes as follows in reference to the "Thomas Safety Baggage-Check:"

"I profess to be a practical railroad man—have gone from the bottom to my present position—and am satisfied, after a practical use of the 'Thomas Safety Baggage-Check,' that, both for *local and through business*, it has no equal, and were it not for the deep-rooted prejudices of certain parties connected with some of the leading roads of the country, the 'Thomas Baggage-Check' would this day be in use on nearly every road, as they can be used wherever checks are needed. They are cheaper, more satisfactory, less complicated, and better adapted to the business than any other check I ever met with. With other checks and systems of checking baggage, the checks are frequently running out, and necessitating constant telegraphing for more checks, at great inconvenience to both the railroad and the traveler. The Thomas Check is *always on hand*, saving all annoyances. I could write pages showing the trouble and vexations arising from the use of the old-style reversible check, which are wholly unknown with the Thomas Check. Can't you, by statements and figures, so bring it home to those in authority who do not wholly understand the working in detail, so that they will plainly see its many advantages and unequalled excellence?"

\$37,600 saved by using the Thomas Check.

THE attention of railway officers, and all interested in the economical management of the railways of the United States and the Dominion of Canada, is directed to the following communication addressed to W. R. Barr, Esq., General Passenger Agent of the Erie Railway, in answer to the question in reference to the comparative merit and cost of the "Thomas Patent Improved Railroad Baggage-Check," and the old-style reversible check. As the checking of baggage is daily becoming a matter of considerable importance to the railway and traveling community, both as regards the cost of checks, and the safe transmission of baggage to its place of destination, we trust that the subject will receive

the attention and consideration which it so much requires, especially in reference to the *immense amount of money* which the railways of this country have paid and are daily paying out for baggage-checks, and must continue to do, so long as they adhere to the old style of checks and checking of baggage:

NEW YORK, September 20, 1869.

W. R. BARR, Esq., *General Passenger Agent New York and Erie Railway:*

DEAR SIR: In comparing the Thomas Check with the Reversible, I would call your attention to them first as a local check. A road of 30 stations will require about 50 Thomas Checks at each station, which is 1500, and 50 tickets at every station on the road, or 43,500. This number of checks and tickets will completely systematize the business, so that baggage can be checked from any station to any other station.

Of the reversible checks, there will be 435 different kinds, and 50 of each kind will make it 21,750, nearly fifteen times as many as of the Thomas Check. At each station there will be 29 different checks, thereby complicating the business materially; and if any one of the 29 runs out there is no way of checking to that particular station (there being at the same time plenty for other places); whereas, if a single Thomas Check is on hand, it can be used wherever desired. The cost compares:

Thomas Check, 1500, at 25 c.	\$375 00	
Thomas's Tickets, 43,500, at \$1.50	65 25	
		\$440 25
Reversible Check, 21,750, at 16c.		3,480 00

Leaving balance in favor of the Thomas Check of		\$3,049 75

This great outlay is absolutely necessary to make the Reversible compare with the Thomas Check in effectiveness; but even then it is incomparably more complicated; and these two great objections, cost and want of simplicity, have been insurmountable, and there is not at the present day, to my knowledge, a single road in the country using the Reversible Check for their whole local baggage business; nor do I believe it practicable to do so.

The greater number of stations a road has, the more unfavorable will the comparison be for the Reversible Check. For instance, a road of fifty stations will require

Of the Thomas Check, 2500, at 25c.	\$625 00	
Of the Thomas Tickets, 125,000, at \$1.50	187 50	
		\$812 50
Of the Reversible Check, 61,250, at 16c.		9,800 00

Difference in favor of Thomas Check		\$8,987 50

Again, a road of 100 stations will require

Of the Thomas Check, 5,000, at 25c.	\$1,250 00	
Of the Thomas Tickets, 500,000, at \$1.50	750 00	
		\$2,000 00
Of the Reversible Check, 247,000, at 16c.		39,600 00

Difference in favor of the Thomas Check		\$37,600 00

It is at once seen, when, as in this last instance, there are a great many stations, how absurd it would be for any large road to attempt to introduce the reversible check to transact its local business with. And it is quite plain why no road has ever adopted it fully; for, with the above great number, there would be but 50 of each kind, or 4940 different kinds.

As a through check, its merits equal if they do not surpass it as a local.

The competition between the different lines makes it desirable to ticket to as many places as possible, and *via*. many routes. To be able to check baggage in the same way is perhaps a greater advantage; for, when not "checked through," the inconvenience of rechecking baggage is much greater than the purchase of another ticket.

When a road adopts the "Thomas Check" it is prepared to check to any place desired, and *via*. any route by simply using a ticket with the route printed upon it in one of the checks. With the Reversible it is very different. There must be a number of different checks for every place. The baggage-rooms in every large city, the walls being covered with hooks, each hook holding its particular bunch of checks, show in the plainest manner the great number and kinds of checks needed to do the business; and with many of the older roads, the number thrown out of use exceeds that at present required. Very many of the checks are seldom used, but still a supply must be kept on hand in case of necessity.

None of the "Thomas Checks" need ever be thrown aside; all can be kept in general use.

As a "Through Check" the cost will compare as in the preceding cases of local checks. The greater the business, the more favorable will the comparison be for the "Thomas Check."

Respectfully,

G. C. THOMAS.

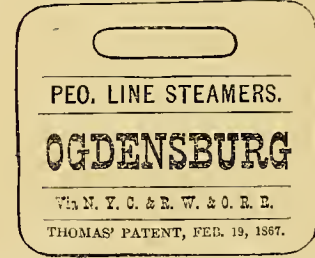
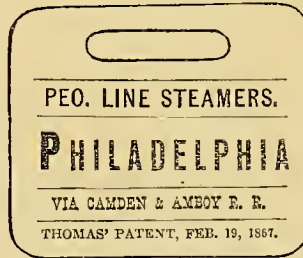
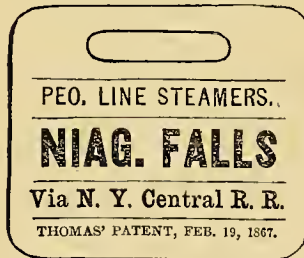
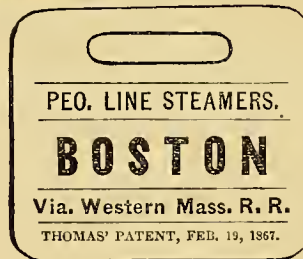
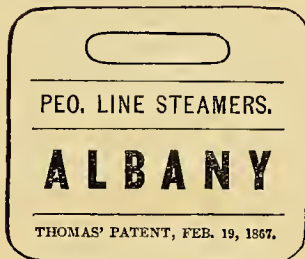
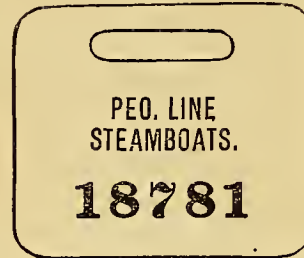
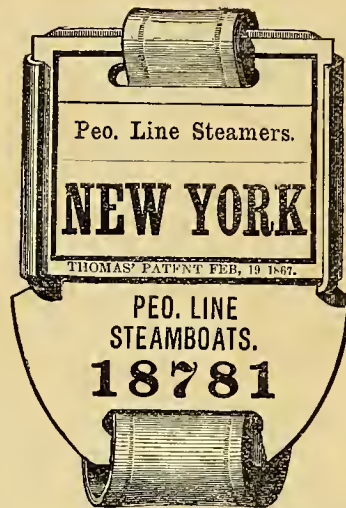
The foregoing communication was published in the *Courier-Journal*, of Louisville, October 6th, at which time the General Ticket and Passenger Agents connected with the railways of the country held their semi-annual convention. The remark was made that the comparison between the old-style reversible check and the "Thomas Improved Safety Baggage-Check" was not fair or just; as no road in the country professed to bring the checking of baggage to such a state of perfection as the "Thomas Check" professed to do.

In reply to the above remark, Mr. Henry Steffee, General Ticket Agent of the Louisville, Cincinnati and Lexington Railroad, said: "The comparison is both fair and just. We have been using the 'Thomas Check' on our road for some time past. It has reduced the checking of baggage to a perfect system, which no other check or system of checking can do." Which statement was confirmed by the General Baggage Agent of the line, as also by the Station Agent at Louisville.

The inventor of the "Thomas Check" says: "These two great objections, (to the old reversible check,) *cost and want of simplicity*, have been insurmountable; and there is not at the present day, to my knowledge, (which, during the past month, we ascertained to be a fact while traveling through the West and South,) a single road in the country using the reversible check for their whole local baggage business; nor do I believe it practicable to do so." And yet, notwithstanding we have for three years, and do now, positively and unequivocally assert that the *Thomas Patent Safety Baggage-Check has reduced the checking of baggage to a perfect system*, which statement is confirmed by the officers of thirty roads, there are those who will continue to adhere to the old expensive system, *regardless of cost*.

Another very important fact to be taken into consideration is, the large number of baggage-checks which must necessarily accumulate by the use of the old style of checks and system of checking baggage. *Tens of thousands of checks are at this time lying idle and useless in the various baggage-rooms throughout the United States, and tens of thousands more must necessarily be constantly added to them* by continuing the use of the old style of check and adhering to the old system of checking baggage. A brass manufacturer informed us that he was selling a check-manufacturer in the city of New York *tons of brass for railroad checks*. Who pays for those checks? Every road that pays *nine thousand six hundred dollars* for baggage-checks, when a better check and better system can be had to do the business much better for *two thousand dollars*. Again, we have been told that no road professes to bring the checking of baggage to such a state of perfection as can be done by the "Thomas Check." If such is the case, and we will take the gentleman's word for it, why not at once abandon an imperfect and adopt a perfect system of doing the business? It is certainly very singular for any person in this age of progress to confess that their system of doing business is imperfect, and object to adopt one superior in every respect—one which will reduce the whole business to a perfect system.

People's Line Steamboats.



THE attention of railway officers is directed to the following from the People's Line of Steamboats, running between New York and Albany, connecting with the Express Trains on the New York Central, Rensselaer and Saratoga, Albany and Susquehanna, Albany and Boston, and the lines of railroad between Philadelphia, Baltimore, Washington, &c. The officers of this line of Steamboats were very careful in investigating the various claims of the different Baggage-Checks and, as will be perceived, after a thorough investigation, together with practical demonstration, give the following result of their experience :

OFFICE OF PEOPLE'S LINE OF STEAMERS, NEW YORK.

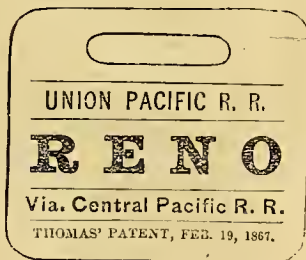
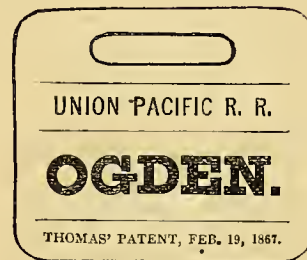
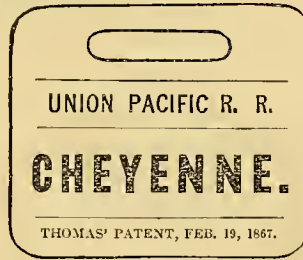
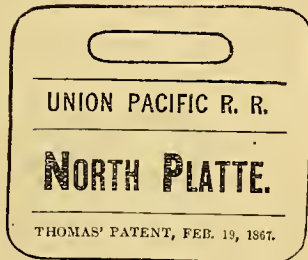
G. F. THOMAS, ESQ., *Editor Appletons' Railway Guide* :

DEAR SIR : We cheerfully add our testimony in reference to the superiority of the "Thomas Baggage-Check" over all others. Our Baggage-Master informs us that it has no equal as regards surety, safety, and reliability. We are using it with our connecting lines of railroad, and it has reduced the checking of baggage to so perfect a system that thus far we have not had a single complaint in reference to baggage having been lost or miscarried. We therefore recommend its use to all Railroad and Steamboat Lines that are in want of a safe, sure, and reliable Baggage-Check.

Yours truly,

JNO. C. HEWITT, *General Ticket Agent.*

Union Pacific Railroad.



PEOPLE'S LINE OF STEAMERS, NEW YORK, June 15, 1870.

G. F. THOMAS, Esq., 90, 92 & 94 Grand Street, New York :

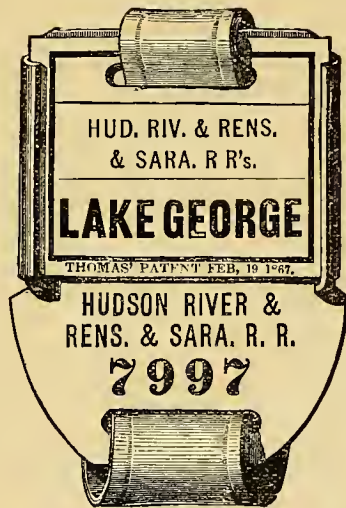
DEAR SIR : We have used the " Thomas Safety Baggage-Check " over two years, both for *local* and *through business*—for our through business principally—and we consider the system not only the best, but the only one for the checking of baggage, and were it in general use upon every railroad and steamboat in the country there would be no complaints of lost baggage. From over two years' experience I am satisfied that too much cannot be said in its favor. I am also fully convinced that it is the only check which combines the true principle of checking baggage, both as a through and local check.

Respectfully yours,

DAVID MOUNTAIN, *General Baggage Agent.*

W. Snyder, late General Superintendent of the Union Pacific Railroad, says :

" I take pleasure in stating that we have given the ' Thomas Safety Baggage-Check ' a thorough trial on our road, and have had no difficulty with baggage since its adoption, and, in the opinion of all interested, it is by far the best system for checking baggage ever invented."



UNION PACIFIC RAILROAD, OFFICE OF THE GENERAL BAGGAGE AGENT, OMAHA.

G. F. THOMAS, Esq., New York :

DEAR SIR : The additional station-tickets received. I have had an experience of eighteen years in the baggage business, and must say that with all my experience in checking baggage, I have never before met with any system which equals yours in the safe transmission of baggage. We have not had any complaint of lost baggage on the Union Pacific since its adoption, and we now consider that we have the best system of checking baggage there is on the continent. Your check obviates the necessity of pasting the names of stations, and defacing the traveler's baggage with chalk-marks, which has always been very objectionable.

Yours truly,

H. T. CLARK, *General Baggage Agent.*



J. M. Toucey, Esq., General Superintendent of the Hudson River Railroad, says :

"We are satisfied with the working of the 'Thomas Improved Baggage-Check,' and recommend it to all in want of checks."

In addition to the above, the late Baggage-Master of the road says :

"The 'Thomas Baggage-Check' has been in use on our road since April, 1867, and during the traveling season between New York and the principal stations, and Saratoga, *not a single mistake or miscarriage was made in the transmission of baggage.* Such a thing never was known before, since I have been connected with the road, which is over six years ; and I have never, in the course of my experience, met with a baggage-check so reliable in every respect.

"W. L. ROBINSON, *Baggage-Master.*"

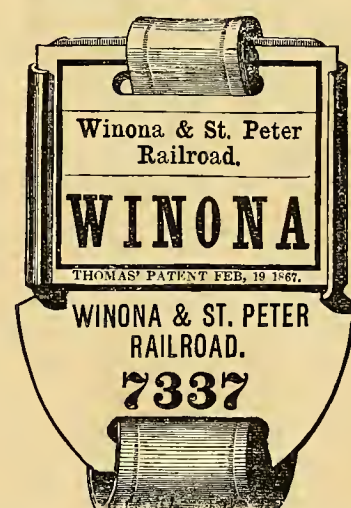


MORRIS AND ESSEX RAILROAD COMPANY, OFFICE OF SUPERINTENDENT, HOBOKEN, N. J.

G. F. THOMAS, ESQ. :

DEAR SIR : Having used your Check upon our road since March, 1867, we take pleasure in recommending it as the best Railway Baggage-Check that we have ever met with. It is not only the best Baggage-Check in practical operation, so far as the safe transmission of baggage from place to place is concerned, but it also simplifies the general baggage business, that any person of the most ordinary capacity can attend to it. During the time it has been in use on our road, it has paid for itself over and over again, not only so far as dollars and cents are concerned, but also as regards its absolute certainty in reference to the safe transmission of baggage on time, as the use of this Check leaves nothing to chance. We do, therefore, without the least hesitancy, recommend its use to any railway company, being fully satisfied, after the most thorough trial, that, for a safe, reliable Railway Baggage-Check, it has no equal ; and, were it at this time in use upon every road in the country, the checking of baggage would not only be reduced to a perfect system, but would also be the means of saving railroad companies fully one half of the present cost of conducting the baggage business.

S. SCHOCH, *Sup't M. & E. R. R.*



THE attention of railroad and railway officers is directed to the following from Mr. S. E. Mayo, the General Ticket Agent of the Albany and Susquehanna Railroad. Mr. Mayo has, through the instrumentality of this Check, saved the line represented by him hundreds of dollars, as he remarks : " If we should discontinue our connection with any route, the ' Thomas Check ' is not lost or become useless, as is the case with the old style of checking baggage, but, with the cards, they become available elsewhere." Railroad officers will please bear in mind, not a single one of the " Thomas Safety Baggage-Checks " becomes useless, but can at once be transferred to any or every connecting road in the country—an advantage which the old superannuated check never did have nor ever can possess.



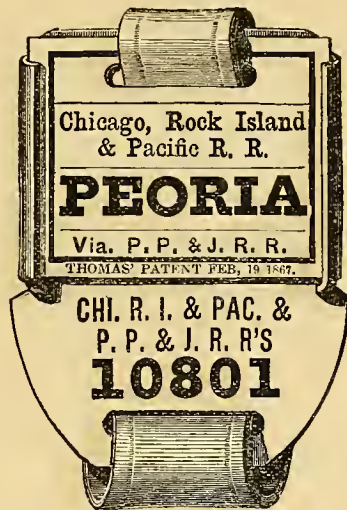
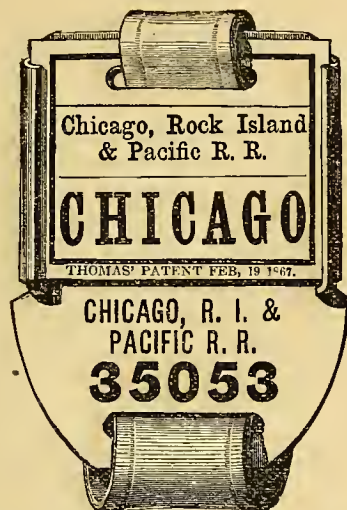
In one minute of time we can show any Superintendent or other officer of any road how easily this check accommodates itself as a *through check* upon any line in the country, and in the most simple manner. Mr. Mayo writes as follows :

"In reference to the 'Thomas Safety Railroad Baggage-Check,' it has no equal ; and if I were not thoroughly convinced, by personal experience, that it merits all and more than is claimed for it, I would not speak so highly in its favor. As you are aware, we have recently added a large number of *through tickets* to our stock—with the Erie Railway, alone, some thirty-eight different forms. With the old style of checking baggage I should have been compelled to buy not less than thirty-eight hundred checks for those thirty-eight stations, which is obviated by the use of the Thomas system of checking baggage. Instead of covering the whole side of my baggage-room with thirty-eight hundred different forms of baggage-checks, I simply add 38 forms of station-cards to my collection, in a thirty-inch case, alongside of which are my brass checks for any station



designated by card. Another great advantage possessed by this check over the old style is, if we should discontinue our connection with any route, the Thomas Check is not lost or become useless, as is the case with the old style of checking baggage, but, with the cards, they at once become available elsewhere. Experience daily convinces me that the Thomas Check is the *only economical, systematic, and safe check in use*, and that it will not be possible much longer for its opposers to close their eyes upon its many great advantages over all other checks and systems of checking baggage, and it must ultimately commend itself to any and all who are not too prejudiced to give it a fair trial. I therefore recommend it with perfect confidence to all railroad companies as the best baggage-check in use for both local and through travel."

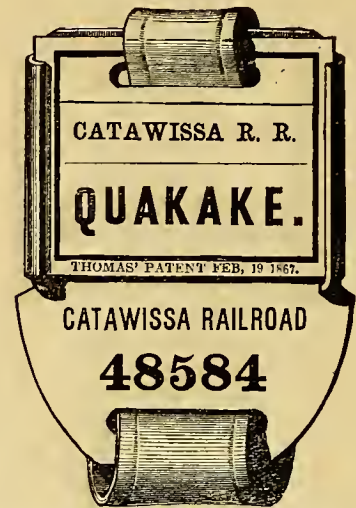
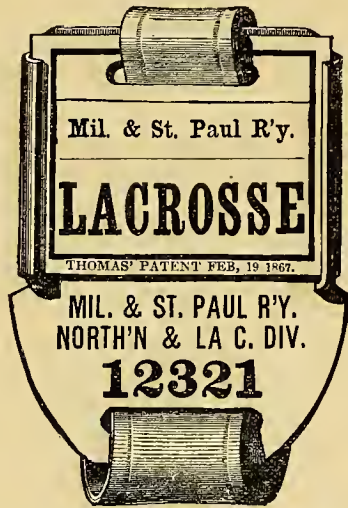
We would add, in conclusion to the above from Mr. Mayo, that the cost of the old style of brass check, for the thirty-eight stations, at sixteen dollars per hundred, would be five hundred and twelve dollars ; the cost of the cards for the Thomas Check, which the road has on hand and in use—as the



check is sent to any and every station—would be, at one dollar and fifty cents per thousand (*not hundred,*) say forty thousand, sixty dollars, a saving, on thirty-eight stations, of four hundred and fifty-two dollars. Another and very important thing to be taken into consideration is, that baggage can be sent to any part of the United States and the Canadas with the traveler, with unerring certainty, and every check can be used from every station on any road, or any line of road, to any other station on any other line of road upon which tickets are sold; as per example: a passenger, with his baggage, can be sent from the Fifth Avenue Hotel, New York, to San Francisco, California, and his baggage checked—provided he purchases his tickets for that point—and the same check can be returned to New York, or any other place, on another piece of baggage, an advantage possessed by no other check or system of checking baggage.



THE following, from the Chicago, Rock Island and Pacific Railroad, in reference to the practical working of the "Thomas Improved Safety Railroad Baggage-Check" on that important line of railway, is certainly deserving of the attention of all interested in the safe transmission of baggage. Some time since, when this road was finished to Des Moines, the officers were satisfied that the former method of checking baggage with the old style of check was not safe, and it was not advisable to continue using it if a better check could possibly be found. They therefore wrote to all the baggage-check manufacturers in the country, requesting a sample of their different styles of checks to be sent them.



After a long and careful investigation, they concluded to give the "Thomas Improved Safety Check" a trial, and the following communication gives the result of their experience :

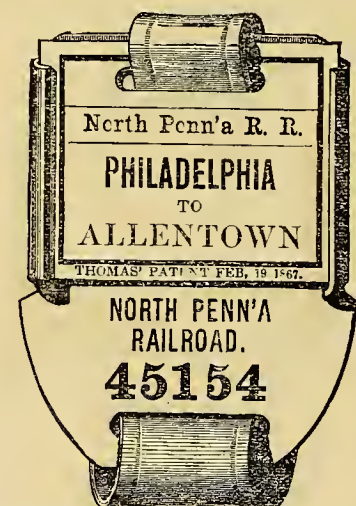
CHICAGO ROCK ISLAND AND PACIFIC RAILROAD COMPANY, }
OFFICES OF THE TICKET AND PASSENGER DEPARTMENTS. }

G. F. THOMAS, Esq., *Editor Appletons' Railway Guide, New York :*

DEAR SIR : Your "Patent Baggage-Check" is in use on the entire line of this road, and gives universal satisfaction. We are fully convinced that the selection we made was a wise one, and do not hesitate to recommend it to all railroad companies in want of a sure, safe, and reliable check. It can have no superior, and we have seen nothing yet that in any way compares with it. We have had no trouble since its adoption.

Yours truly,

E. ST. JOHN, *General Ticket Ag't.*



BELVIDERE, DELAWARE AND FLEMINGTON RAILROAD, }
OFFICE OF GENERAL TICKET AGENT, LAMBERTVILLE, N. J., Oct. 24, 1868. }

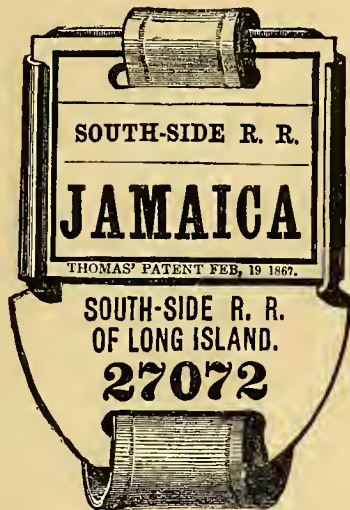
G. F. THOMAS, Esq. : The Thomas system of checking baggage works to our entire satisfaction. No failure in the transmission of baggage since we commenced its use, over a year ago. The Baggage-Masters are pleased with them, and I am well satisfied they are the best baggage-check in use, and better calculated to perform the various duties of both local and through business than any or all other baggage-checks I have ever seen. Every check is, or has been, kept in constant use since we first commenced using them ; and, so far as certainty, simplicity, and economy are concerned, they have no equal.

Yours, very truly,

A. C. DAVIS, *General Ticket Agent.*

MORRIS AND ESSEX RAILROAD, OFFICE OF SUPT HOBOKEN, N. J.

WE have used the "Thomas Improved Baggage-Check" on our road over three years, during which time we have never lost a piece of baggage to which it was attached ; but, on the contrary, the baggage in every instance arrives at its place of



destination with unerring certainty. Not a groove on a check has been crushed, and every check is in use that we started with ; and so far as the expense of the cards is concerned, those we commenced with are yet in use, and, from appearances, likely to be for a long time, notwithstanding that many of them are kept in constant employment. We therefore feel satisfied that it is not only the best, the most perfect, but also the most economical, and certainly the safest and most reliable baggage-check in use.

MILWAUKEE AND ST. PAUL RAILWAY, GENERAL PASSENGER AGENT'S OFFICE.

G. F. THOMAS, ESQ., 90, 92, and 94 Grand St., New York.

DEAR SIR: After a full and thorough trial of your new and improved Baggage-Check, I am fully prepared to pronounce in-favor of it. Your check and system of checking are a perfect success.

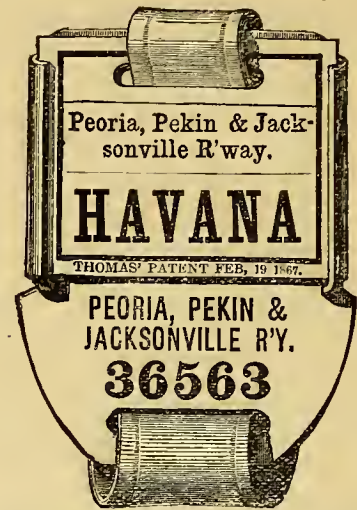
Yours truly,

A. V. H. CARPENTER, G. P. A.

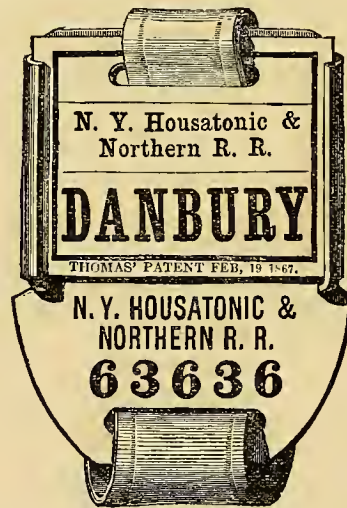
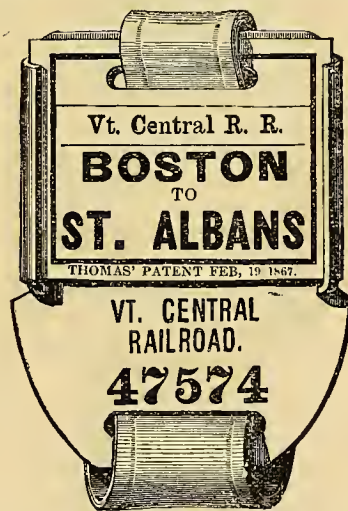


It is well known to all connected with the baggage department of the railways of the country, that, until the introduction of the "Thomas Patent Improved Safety Railway Baggage Check," there never was a safe and sure method of checking baggage; that the so-called systems and checks in use previous to its introduction were comprised in a hap-hazard way of doing things, and the baggage might or might not go through to its place of destination, just as it happened; but the introduction of the "Thomas Safety Check" checked all this uncertainty upon the several roads upon which it is in use, thus checking at once all this loose manner of doing business.

The fact is, that previous to the introduction of the "Thomas Baggage-Check" on the various



roads upon which it is in so successful operation, there was no perfect system of checking baggage; and the result was and is at this time, that those roads who still adhere to the old system are compelled to keep men employed to hunt up lost baggage. This is all obviated by the use of the Thomas Check, which fact is confirmed by every baggage-man on the roads upon which it is in use, as the check designates the station where the baggage is to be sent, and no other. If there can be any thing more simple, positive, and to the point, we would be pleased to hear of it. The officers of every road upon which this check is in practical operation, without a single exception, recommend it in the highest terms, and would as soon think of returning to the old flat rail as to return to the old style of checking

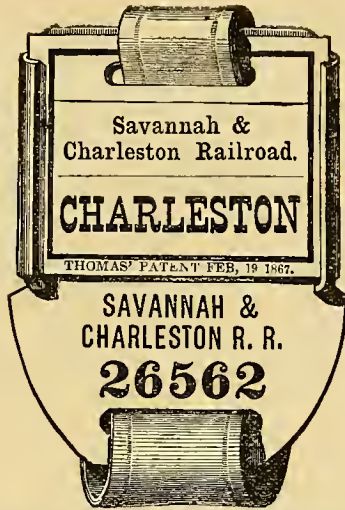


baggage. That this check positively combines the virtues of all other checks, together with improvements possessed by no other, is demonstrated daily, and is consequently incontrovertible; the progress of the age requires that a more perfect system of checking baggage should be universally adopted, and the "Thomas Safety Check" is the only check which answers the purpose.

ALBANY AND SUSQUEHANNA RAILROAD, GENERAL TICKET OFFICE, ALBANY, N. Y., Oct. 26, 1868.

G. F. THOMAS, ESQ., NEW YORK:

DEAR SIR: The "Thomas Patent Baggage Check" has been in use on our road and its *fourteen stage routes* nearly three years, and during that time, it affords me much pleasure to be able to say that we have not lost a piece of baggage, nor has any gone astray that bore your checks. The station direction-cards have neither torn nor got out of place in the brass check;



and never in a single instance have any of the grooves in the checks been crushed so as to prevent the passage of the station direction-tickets in and out of their proper place. The check is so perfect and simple in its operation that our baggage-men would be very unwilling to return to the old style of check. In reference to economy, there is no other system of checking baggage which can compare with it; the groove in the check protects the paper station-card and prevents anything from coming in contact with it, so of course there is but little or no wear to it, and all the station tickets that we require will be for the new stations. Taking all things into consideration, a more perfect, satisfactory, and economical system of checking baggage has never before been brought to the attention of the railroad and traveling community; and experience has convinced me that the check is only to be known to be fully appreciated by the officers of the various roads.

Yours respectfully,

S. E. MAYO, *General Ticket Agent.*



E. ST. JOHN, Esq., *G. T. A. of the Chicago, Rock Island and Pacific Railroad*, says:

"We do not hesitate to recommend the 'Thomas Patent Safety Baggage-Check' to all railroad companies in want of a safe, sure, and reliable baggage-check."

WESTERN UNION RAILROAD, GENERAL SUPERINTENDENT'S OFFICE, }
RACINE, WISCONSIN, May 23, 1870. }

G. F. THOMAS, Esq., 90, 92, and 94 Grand Street, New York:

DEAR SIR: I am very much pleased with the working of your Patent Safety Baggage-Check, and consider it the best check in use.
Respectfully yours,
D. A. OLIN, *General Superintendent.*

GEORGE A. STONE, Esq., *Agent Vermont and Canada Railroad*, says:

"The 'Thomas Safety Baggage-Check' is in use on our roads, and gives the best of satisfaction. Enclosed please find list for additional station-cards, to which you will please give your immediate attention. We have made arrangements to use the check on our through business."

FREDERICK M. MEAD, Esq., *Supt. of the New York, Housatonic and Northern Railroad*, says :
 " We are much pleased with the working of the ' Thomas Safety Patent Railroad Baggage-Check. ' "

SUPERINTENDENT'S OFFICE, SAVANNAH AND CHARLESTON RAILROAD COMPANY, }
 CHARLESTON, May 27, 1870. }

G. F. THOMAS, Esq., NEW YORK :

DEAR SIR : During the time your Safety Baggage-Check has been in use it has given entire satisfaction. When prepared to order additional checks, your's will certainly have the preference.

Very respectfully,

C. S. GADSDEN, *Eng. and Supt.*

JAMES M. WHITE, Esq., *Train-Master of the Central Railroad of Georgia*, says :

" We are much pleased with the ' Thomas Patent Safety Baggage-Check. ' They are just the check required by railroad companies, as they can be prepared in advance, or changed in a moment, for any station, and a very small number of brass checks does the work of many. There is not the least doubt but that it will in time take the place of all other baggage-checks now in use. "

ATLANTIC AND GULF RAILROAD COMPANY, }
 GENERAL SUPERINTENDENT'S OFFICE, SAVANNAH, April 14, 1870. }

G. F. THOMAS, Esq., 90, 92, and 94 Grand Street, New York :

DEAR SIR : The " Thomas Safety Baggage-Checks " are in full operation on our road, and are giving great satisfaction. With the opening of our new line to Atlanta, we shall extend their use in that direction.

Yours very truly,

H. S. HAINES, *General Superintendent.*

Z. WILLIAMS, Esq., *of the Providence and New York Steamship Company*, says :

" From the experience we have had with the ' Thomas Patent Safety Baggage-Check, ' we cheerfully recommend them to general favor. "

PRICE-LIST.

Brass Check and Duplicate, price.....	\$25.00	per	100
Japanese Station Card, printed on one side.....	7.00	"	1,000
" " " " two sides.....	8.00	"	1,000
Extra Fine Thick Station Card, Colored, printed on one side.....	3.50	"	1,000
" " " " " " two sides.....	4.50	"	1,000
Common Paper Station Card, White, printed on one side.....	1.50	"	1,000
" " " " " " two sides.....	2.50	"	1,000
Walnut Cases, for from 30 to 40 different Cards.....	6.00	each.	
" " " 40 " 60 " "	8.00	"	
" " " 60 " 80 " "	10.00	"	
" " " 80 " 100 " "	12.00	"	
" " " 100 " 150 " "	15.00	"	

Not less than one thousand cards are printed for any one Station.

We will engage to introduce the " Thomas Safety Check " upon any road or system of roads and ensure its accurate working.

AS A

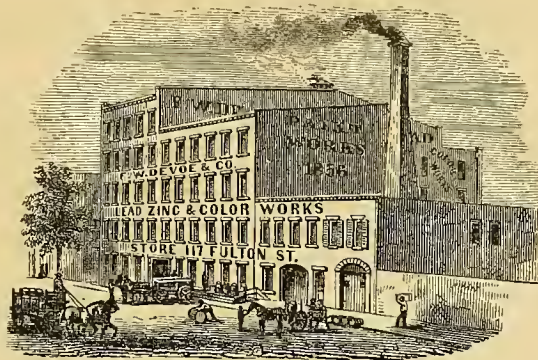
" THROUGH CHECK "

we guarantee its perfect working, uniform certainty and reliability.

Perfectly simple, it does not require the least change by any road of its manner of conducting the business already adopted. It fits itself admirably to any system ; where there is no system it will systematize.

All information in reference to the " Thomas Safety Baggage-Check " will be cheerfully furnished by addressing

G. F. THOMAS, 90, 92 and 94 Grand St., New York.



[Erected 1852.]

F. W. DEVOE & CO.,

117 Fulton and 44 Ann Streets, New York,

MANUFACTURERS OF

White Lead, Zinc White, COLORS,

AND

VARNISHES.

F. W. Devoe & Co. received Prize Medals from the American Institute, New York, and the Massachusetts C. M. Association, Boston, at the Exhibitions in the Fall of 1869,

FOR THEIR MANUFACTURES OF

CHROME GREEN,		PRUSSIAN BLUE,
CHROME YELLOW,		UMBER,
VERMILION,		SIENNA,
PARK LAWN GREEN,		PERSIAN SCARLET,

COLORS IN OIL and VARNISH.

EXTRACT FROM REPORT:

"The Colors made and exhibited by this firm are very fine and strong, especially the Chrome Green, Orange Chrome, Deep Yellow and Vermilion. The Committee take pleasure, in view of the superiority of these Colors, in recommending a Silver Medal."

SOLE MANUFACTURERS OF

F. W. Devoe & Co.'s Artisan Graining Colors.

Prepared in Oil, and ready for use.

FREDERICK W. DEVOE,
JOHN ALSTON,
JAMES F. DRUMMOND,
FRED'K SAUNDERS, JR.,
J. SEAVER PAGE.

PAINT FACTORY, } 100, 102, 104, 106 and 108 Horatio Street.
and 99, 101 and 103 Jane Street, New York.
VARNISH WORKS, . . 112, 114 and 116 North Ninth St., Brooklyn, N.Y

APPLETONS' JOURNAL

PROSPECTUS FOR 1871.

Appleton's Journal is Published Weekly, and consists of thirty-two pages, quarto, each number attractively Illustrated.

ITS CONTENTS CONSIST OF

ILLUSTRATED PAPERS UPON THE VARIOUS SUBJECTS

THAT PERTAIN TO THE

PURSUIITS AND RECREATIONS OF THE PEOPLE,

WHETHER OF TOWN OR COUNTRY;

Pictorial Descriptions of Famous Localities,

BIOGRAPHICAL SKETCHES, WITH PORTRAITS, OF CELEBRITIES IN ART, LITERATURE, AND SCIENCE,

Illustrated Travels and Sketches of Adventure,

ESSAYS UPON LITERARY AND SOCIAL TOPICS,

Entertaining Papers on the many subjects that enlist the sympathy or pique the curiosity of intelligent minds,

AND

CHOICE FICTION,

IN THE FORM OF SERIAL NOVELS AND SHORT STORIES.

The Writers for APPLETONS' JOURNAL include many of the most distinguished names in American Literature.

We are now publishing a series of Illustrated Papers, of great interest to every person in the country. They are issued under the general title of

PICTURESQUE AMERICA,

and consist of a series of drawings, with accompanying descriptions, of the most unfamiliar and striking aspects of our country. They are the result of a personal search for the picturesque on the part of the artist, who for many months has traversed different sections of the country, for the purpose of securing a series of fresh, vivid, graphic, and thoroughly truthful delineations of American localities. These illustrations are of large size; they are engraved in the best manner known to the art, and they are printed on fine toned paper, in pages supplementary to the JOURNAL. No such series of American Illustrations has hitherto been published; they will form in time a superb gallery of American Landscapes.

Price of APPLETONS' JOURNAL, 10 cents per number, or \$4 per Annum, in advance.

SUBSCRIPTIONS RECEIVED FOR TWELVE OR SIX MONTHS.

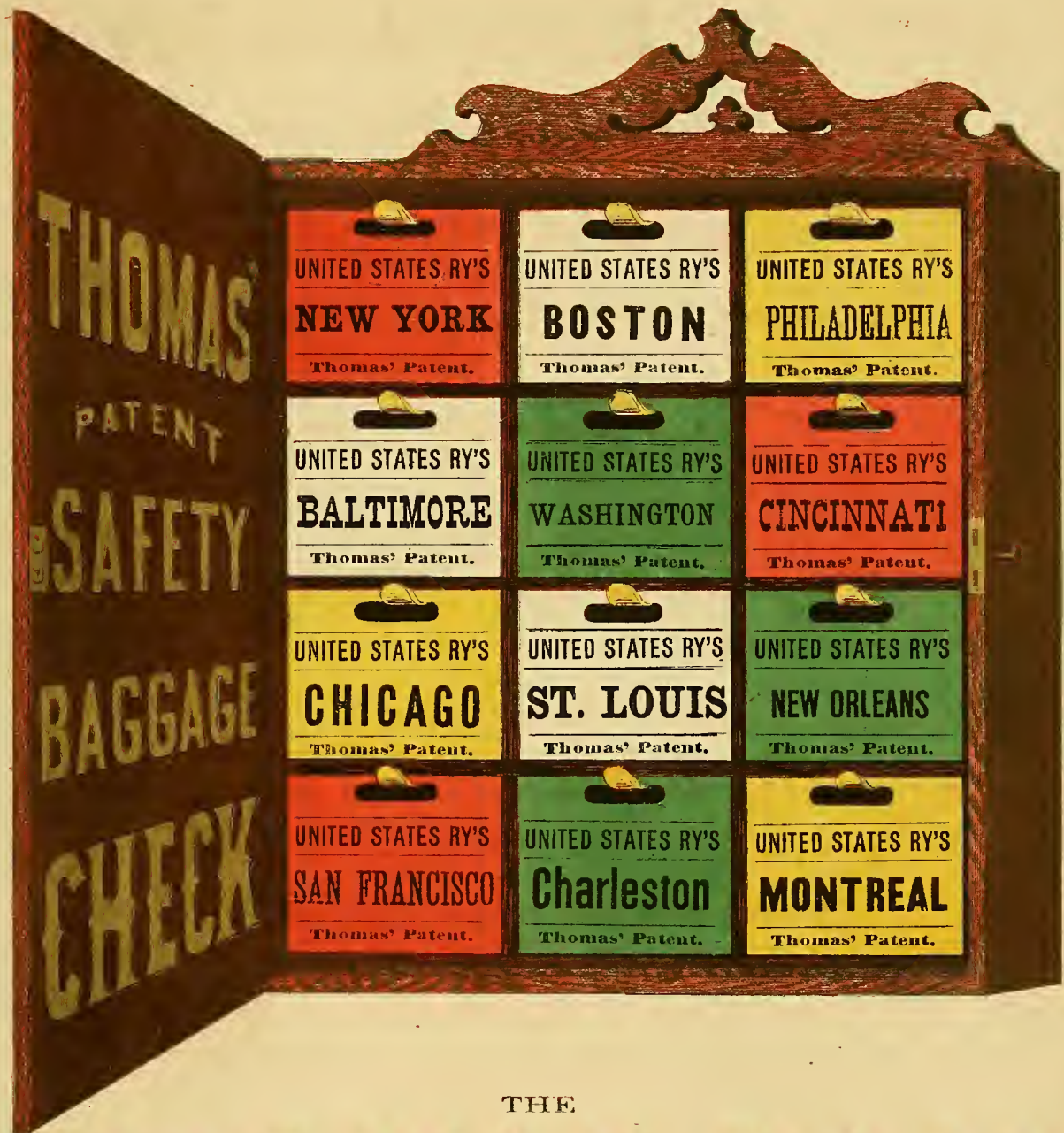
Any person procuring Five Yearly Subscriptions, and remitting \$20, will be entitled to a copy for one year gratis.

The postage within the United States, for the JOURNAL, is twenty cents a year, payable yearly, semi-yearly, or quarterly, in advance, at the office where received. Subscriptions from Canada must be accompanied with twenty cents additional, to prepay United States postage.

The publication of the JOURNAL began April 3, 1869. Back Numbers can always be supplied. A new volume begins with No. 93, January 7, 1871.

APPLETONS' JOURNAL contains 25 per cent more reading-matter than the largest of the magazines published at the same price, and fifty per cent. more than many of them

D. APPLETON & CO., Publishers, 90, 92, and 94 Grand Street, New York.



THE
Thomas Patent Safety Check Case.

THE above engraving represents the Cases and Station Cards to be used in connection with the Thomas Patent Safety Check.

All information in reference to the Check will be cheerfully furnished by addressing

G. F. THOMAS,
90, 92 and 94 Grand Street,
NEW YORK.

SCOYLL M MANUFACTURING CO.



4 BEEKMAN STREET, NEW YORK.

MANUFACTURERS OF

SHEET & ROLL BRASS,

BRASS & COPPER WIRE,

GERMAN SILVER,

COAL OIL BURNERS,

SILVER PLATED WARE & METAL, METAL LAMPS & TRIMMINGS,

METAL BLANKS, CHECKS &c. CUT TO ORDER.

Metal Lasting & Fancy Dress Buttons

PARTICULAR ATTENTION GIVEN TO SPECIAL DESIGNS FOR
RAILROAD CONDUCTORS, NAVAL, MILITARY, SCHOOL
AND OTHER METAL BUTTONS.

MANUFACTURERS, IMPORTERS AND DEALERS IN EVERY DESCRIPTION OF

PHOTOGRAPHIC GOODS.

MANUFACTURERS OF

JEROME'S CELEBRATED

CLOCKS

8 DAY & CALENDAR.

MANUFACTORIES
WATERBURY, CONN.
NEW HAVEN, CONN.
NEW YORK.

AGENCIES
4 BEEKMAN ST., NEW YORK,
131 FEDERAL ST., BOSTON.
105 RANDOLPH ST., CHICAGO.
73 BOLD ST., LIVERPOOL, G. B.

Boston Public Library
Central Library, Copley Square

Division of
Reference and Research Services

Science and Technology
Department

The Date Due Card in the pocket indicates the date on or before which this book should be returned to the Library.

Please do not remove cards from this pocket.

BOSTON PUBLIC LIBRARY



3 9999 06629 393 5

